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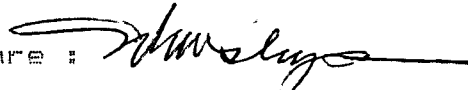
## THE IMPROVEMENT OF THE INDONESIAN INSTITUTE OF MERCHANT MARINE EDUCATION AND TRAINING


by  
EDI WALUYO  
Indonesia

A paper submitted to the Faculty of the World  
Maritime University in partial fulfillment of the  
requirements for the award of a

MASTER OF SCIENCE DEGREE  
IN  
GENERAL MARITIME ADMINISTRATION

The contents of this thesis reflect my personal views  
and are not necessarily endorsed by the University

Signature :   
Date : 16 October 1989.

Supervised and assessed by Professor Pierre V. Houssin,  
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## ABSTRACT

EDI WALUYO. *The Improvement of the Indonesian Institute of Merchant Marine Education and Training*. A thesis to fulfill one of the requirements for the award of Master of Science Degree in General Maritime Administration. Malmoe, Sweden : World Maritime University, October 1989.

The objective of this project is to analyse the present condition of the Indonesian Institute of Merchant Marine Education and Training (PLAP) in Jakarta - Indonesia.

The objectives of education are grouped into three objectives namely Cognitive, Affective and Psychomotor. Factors which are assumed influencing the achievement of those objectives are organization structure and its tasks, educational system and its curriculum, training facilities and training equipment, teachers and instructors.

Research was done by doing library research and field research. Technical analysis used qualitative description by comparing the PLAP to the USMMA as an ideal example.

By learning aforesaid factors which are not possessed by or have not yet fully been put into function at the PLAP is one of basic points in coming to a conclusion.

By analysing data, it can be proposed that some training facilities and training equipment are inadequate and have to be provided. The skills, knowledge and qualifications of the teachers and instructors also have to be improved. The present campus location is not suitable anymore and

has to be relocated before the needed facilities and equipment provided.

All aforesaid problems have been the government efforts to overcome them. The Maritime Sector Training Project, which was formed by the Ministry of Communications has purposes to improve the PLAP and other governmental nautical colleges to meet the international standards laid down by the STCW 1978 Convention, and to provide training for maritime personnel including port, and shipping companies employees. It is also expected to meet the future training demand in maritime field.

## ACKNOWLEDGEMENT

First of all, I would like to express my special gratitude to my course professor Dr Jerzy Mlynarczyk for his wise advice and helpful guidance during my studies and in writing this thesis.

I am also indebted to Professor Pierre V. Houssin and Professor Donald J. Ferguson for their valuable advice and assessment of this thesis.

I would like to express my gratitude to all permanent professors, lecturers and visiting professors of the University from whom I obtained very useful knowledge.

Also my profound gratitude to the teachers at the English Section of World Maritime University, especially to Mrs Inger Battista for her linguistic support and supervision during the editing of this thesis.

I would like to express my thanks to my Government, the Ministry of Communications who gave me the opportunity for this specialized studies and also to the Government of Federal Republic of Germany, Carl Duisberg Gesellschaft e.V. for awarding me the fellowship during my two-year studies at the University.

My thanks also go to the Indonesian Institute of Merchant Marine Education and Training (PLAP) in Jakarta - Indonesia, and to the United States Merchant Marine Academy in New York-USA, where I carried out my job

training and obtained much knowledge and got data for completing my thesis.

Finally, I really appreciated my wife Sri who took care of our children Wahyu, Sotya and Swasti during my two-year tenure across the miles away from them at the Henrik Smith Hostel in Malmoe - Sweden.

Malmoe, 16 October 1989.

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## LIST OF ABBREVIATIONS

- AIP** : Akademi Ilmu Pelayaran ( Merchant Marine Academy)
- AMK A** : Ahli Mesin Kapal 'A' (The third grade of certificate qualifies for duties as engineer officer on ocean-going voyages and also as second engineer on ships of limited power on inter-island voyages)
- AMK B** : Ahli Mesin Kapal 'B' ( The second grade of certificate qualifies for duties as second engineer on ocean going voyages and also as chief engineer on ships of limited power on ocean-going voyages and on ships engaged on inter-island voyages)
- AMK C** : Ahli Mesin Kapal 'C' ( The first grade of certificate qualifies for duties as chief engineer on any ship).
- BP3IP** : Balai Pendidikan, Peningkatan dan Penyegaran Ilmu Pelayaran ( Institute of Maritime Refreshing and Advance Course)
- BPLP** : Balai Pendidikan dan Latihan Pelayaran (College of Merchant Marine Education and Training).
- FKIP** : Fakultas Keguruan dan Ilmu Pendidikan (Faculty of Teacher Training)

- IKIP** : Institut Keguruan dan Ilmu Pendidikan  
(Institute of Teacher Training and  
education)
- IMO** : International Maritime Organization.
- IS** : Ijazah Sementara (The fourth grade of  
certificate qualifies for duties as  
watchkeeping engineer officer on inter-  
island voyages and also as junior engineer  
officer on some ocean-going ships.)
- JM** : Juru Mesin (The fifth grade of certificate  
qualifies for duties as engineer on ships  
employed on local trades).
- MI** : Maritime Institute.
- MPB I** : Mualim Pelayaran Besar I ( The first grade  
of certificate qualifies for duties as  
master on ships of any size on ocean-going  
voyages).
- MPB II** : Mualim Pelayaran Besar II ( The second  
grade of certificate qualifies for duties  
as chief mate on ships of limited size on  
ocean-going voyages and as master on  
certain types of inter-island ships).
- MPB III** : Mualim Pelayaran Besar III ( The third  
grade of certificate which is awarded to  
candidates who successfully complete a  
cadet period of training and qualifies for  
duties as watchkeeping officer on ocean-

going ships).

- MPI** : Mualim Pelayaran Inter-insuler (The fourth grade of certificate qualifies for duties as watchkeeping officer on inter-island ships).
- MPT** : Mualim Pelayaran Terbatas (The fifth grades of certificate qualifies for duties as master and mate on ships engaged on local voyages).
- PLAP** : Pendidikan dan Latihan Ahli Pelayaran (Institute of Merchant Marine Education and Training).
- S - 1** : Sarjana Satu (Graduate)
- S - 2** : Sarjana Dua (Post-Graduate)
- S - 3** : Sarjana Tiga ( Doctor's Degree/PhD.)
- SKP** : Sekolah Kejuruan Pertama ( Vocational Junior High School for girls).
- SMA** : Sekolah Menengah Atas (Senior High School)
- SMKK** : Sekolah Menengah Kesejahteraan Keluarga (Non-Technical Vocational High School)
- SMP** : Sekolah Menengah Pertama ( Junior High School)
- SMPS** : Sekolah Menengah Pekerja Sosial ( School

for Social Workers)

- ST : Sekolah Teknik ( Vocational Junior High School for boys)
- STM : Sekolah Teknik Menengah ( Vocational Senior High School)

## LIST OF ANNEXES

- Annex 1 : Structure of the National Educational System.
- Annex 2 : Strata and Programmes for Higher Formal Education and Teacher Training.
- Annex 3 : Organization Chart of Ministry of Communications of the Republic of Indonesia.
- Annex 4 : Organization Chart of the Education and Training Board, Ministry of Communications
- Annex 5 : Organization Chart of the United States Merchant Marine Academy.
- Annex 6 : United States Merchant Marine Academy Program Sequence.
- Annex 7 : United States Merchant Marine Academy Curriculum.
- Annex 8 : Organization Chart of Institute of Merchant Marine Education and Training. (PLAP)
- Annex 9 : The PLAP Program Sequence.
- Annex 10 : The PLAP Curriculum

## **CHAPTER I**

### **INTRODUCTION**

#### **I.1. THE INDONESIAN EDUCATIONAL SYSTEM IN BRIEF**

The Indonesian educational system consists of primary, secondary (academic and vocational), and higher education (university, teacher training and non-university).

The structure of the educational system is shown in Annex 1.

These three elements which are responsibility of the Ministry of Education and Culture as follows :

##### **I.1.1. Primary and Secondary Education.**

Primary Education is education for pupils between 7 and 13 years of age. Secondary education is education for students between 13 and 19 years of age, comprising the junior and senior high school and the junior and senior vocational high school.

##### **I.1.1.1. The Junior High School and Junior Vocational High School.**

The Junior High School (SMP) are the most popular and are attended by approximately 85% of the students. The students entering the Vocational Junior High Schools (The ST's for boys and the SKP's for girls) mostly do not have the qualifications to go to the SMP. The total number of the ST's is 189, spread over the provinces. Training is given in machine shop, electricity, woodworking, mechanics, printing, woodcarving, furniture, boat building, and fishery. The SKP's provide training in domestic science such as food planning and needleworks.

After furnishing the ST a student will be a semi-skilled worker.

In accordance with the regulations of the Ministry of Manpower, students who have finished the ST are too young to be employed. For this reason most of the ST's are incorporated in the SMP's.

#### **I.1.1.2. The Senior High School and the Vocational Senior High School.**

The academic Senior High School (SMA) is an extension of the academic Junior High School (SMP).

The vocational Senior High School (STM) provides subjects, such as electricity, electronics, hydraulics, civil engineering, textiles, chemistry, agriculture, and mining.

There are also non-Technical Vocational High School, such as SMKK School for Home Economics, SMPs Schools for Social Workers, SMEA Schools for Business Education and so on.

The present aim of the Technical and non-Technical Vocational Senior High Schools is to fill the industrial requirement by practical (50%) and theoretical (50%) in the field of foresaid above.

#### **I.1.2. Higher Education.**

The Decree of the Minister of Education and Culture No. 0211/U/1982 regarding to the programmes of higher education states inter alia :

- (i) Admission to all higher education is only granted to graduates from the Senior High Schools (SMA).
- (ii) The programme is divided into university training and non-university training.
- (iii) The programme of the university training is to provide university-trained professional people in science,

technology, and culture.

(iv) The programme of the non-university training is to provide non-university-trained professional people in science, technology and culture.

(v) The programme of the non-university 'specialist' courses is to provide specialists in a particular branch of science, technology and culture.

#### **I.1.2.1. Programme of the University Study.**

The programme of the university training is divided into the following parts :

(i) Sarjana or under-graduate course (S 1).

There are a minimum of 144 credits and a maximum of 160 credits to be obtained, spread over 8 to 14 semesters after Senior High School.

The programme of the under-graduate course (Bachelor's degree) is not a separate part and consists of a minimum of 110 credits and a maximum of 120 credits.

(ii) The Pasca Sarjana or Post-graduate training (S 2).

This consists of a minimum of 180 credits and a maximum of 194 credits with 12 to 18 semesters after Senior High School.

(iii) The Doctor's degree (S 3) is the third and the highest degree. The minimum requirement is 228 credits and the maximum 233 credits with 16 to 22 semesters after Senior High School.

#### **I.1.2.2. Programme of the non-university study.**

Training consists of shorter courses concluded by a final examination :

(i) Diploma I (D I) comprises a minimum of 40 credits and a maximum of 50 credits. The package is spread over 2



semesters and the course takes 2 to 4 semesters after Senior High School.

(ii) Diploma II (D II) comprises a minimum of 80 credits and a maximum of 90 credits. The package is spread over 4 semesters and the course takes 4 to 6 semesters after Senior High School.

(iii) Diploma III (D III) comprises a minimum 110 credits and a maximum of 160 credits. The package is spread over 8 semesters and the course takes 8 to 14 semesters after Senior High School.

#### **I.1.2.3. Polytechnic Education.**

Polytechnic education, one of the non-university D III courses is a well-balanced, industry-oriented training for higher technicians, which includes practical and laboratory work (45%) and theoretical education (55%) during its three-year programme.

The programme is designed to strengthen the relation between engineers and technicians. The courses are in mechanics, electrical subjects, electronics, and civil engineering, telecommunications, chemical engineering, energy, cold storage, air conditioning, aeronautics, shipbuilding, foundry and commerce, and agriculture. Training for fleet personnel is not provided. The responsibility for this manpower rests with the Ministry of Communications.

#### **I.1.2.4. University Teacher Training Programme.**

All teacher training at this level should be incorporated into the Institute of Teacher Training and Education (IKIP) and the Faculty of Teacher Training (FKIP) in universities.

IKIP includes all existing teacher training institutes and

their sub-divisions. It includes both government and private institutes throughout Indonesia.

The training programme for teacher consists of Graduate, Post-graduate, and Doctor's degree with the total credits which must be obtained as equal as S 1, S 2, and S 3 in universities respectively.

IKIP also performs teacher-training non-university programmes, namely :

(i) The Teacher-Training Diploma Programme which comprises only three courses with examinations and diplomas :

- The D I is a one-year course after graduation from the Senior High School.
- The D II is a two-year course after Senior High School.
- The D III is a three-year course after Senior High School.

After finishing one course the student may be admitted to a higher ranking course of the non-university training or to a university training programme after fulfilling some requirements established by the Director General for Higher Education, Ministry of Education and Culture.

(ii) Akta Teaching Qualification Programme.

This programme consists of :

- Akta I is a one-year training after Senior High School. It is needed by junior teachers teaching at Junior High School.
- Akta II is a one-year training after obtaining 100 credits in non-educational subjects. It is needed by teachers teaching at Senior High School.
- Akta III is a one-year training after obtaining 120 credits in non-educational subjects. It is needed by senior teachers teaching at Senior High School.

- Akta IV is a one-year training after obtaining 160 credits in educational and non-educational subjects. It is needed by lecturers teaching at IKIP, academies and colleges.

- Akta V is a one-year training after obtaining 194 credits in educational and non-educational subjects. It is needed by lecturers teaching at IKIP and universities.

The strata system and programme for Higher Formal Education and Teacher Training can be seen in Annex 2.

## **1.2. THE GOVERNMENTAL INSTITUTES OF MERCHANT MARINE EDUCATION AND TRAINING.**

This thesis only discusses the governmental institutes of merchant marine education and training, which are operated by the Ministry of Communications. It does not discuss the private maritime academies or nautical schools, which are managed by private institutions and accredited by the Ministry of Education and Culture.

There are four governmental institutes which educate and train midshipmen and senior shipmen, namely :

- (i) College of Merchant Marine Education and Training (BPLP) in Ujung Pandang, South Sulawesi.
- (ii) College of Merchant Marine Education and Training (BPLP) in Semarang; Central Jawa.
- (iii) Institute of Maritime Refreshing and Advanced Course (BP3IP) in Jakarta.
- (iv) Institute of Merchant Marine Education and Training (PLAP) in Jakarta.

The responsibility of the Ministry of Communications is to

manage and harness the four institutes above in order to provide seafarers in the national maritime sector.

The institution in the Ministry of Communications which deals with all the education and training activities is the Education and Training Board.

The Decree of Minister of Communications No. KM.

91/OT.002/Phb.1980 states as follows :

**Article 532 :**

The Education and Training Board is the executing agency in educating and training which due to its activities are not covered by the Minister's auxiliary staff, the executing staff and the controlling staff. The Board's functions are governed directly under the authority of the Minister.

The organizational chart of Ministry of Communications can be seen in Annex 3.

**Article 533 furthermore says :**

The Education and Training Board has duties to execute, improve, and coordinate all teaching activities, and education and training activities of the training institutes in Communications and Transportation.

In performing its duties mentioned in Article 533, the Board has functions as stated in Article 534 :

- (i) to plan and formulate the policy of education and training,
- (ii) to formulate the guidance and the technical policies which are to be implemented by the training institutes and to coordinate the execution of education and training,

(iii) to control the education and training activities in the communications and transportation training institutes, (iv) to evaluate the implementation of the education and training outputs.

Furthermore Article 535 states :

The organization of the Education and Training Board consists of:

- (i) Secretariat of Education and Training Board.
- (ii) Land Transportation Education and Training Centre.
- (iii) Air Communications Education and Training Centre.
- (iv) Sea Communications Education and Training Centre.

Two centres which are formerly mentioned above are not discussed in this thesis because they do not have any relevance with the subject of the thesis.

The Sea Communications Education and Training Centre is responsible for planning, coordinating, controlling and evaluating all maritime education and training institutes as directed by the Head of Education and Training Board of the Ministry of Communications.

Some major functions of the Sea Communications Education and Training Centre are :

- (i) to establish maritime and sea communications education and training programmes,
- (ii) to arrange an education and training system in maritime and sea communications, i.e. curriculum, didactic, teaching and instruction methods, training material, and training supplies,
- (iii) to supervise maritime and sea communications education and training institutes in the implementation,
- (iv) to control and evaluate the implementation of the programmes.

The Board and Centre, which have been explained above, do manage the four-governmental institutes of Merchant Marine Education and Training. What the institutes activities are and how they perform their functions, are briefly explained below.

#### **1.2.1. College of Merchant Marine Education and Training in Ujung Pandang, South Sulawesi.**

The BPLP Ujung Pandang is a governmental institute of merchant marine education and training. It trains midshipmen.

The whole campus covers an area of 2.6 hectares without giving possibilities for major extensions.

The facilities comprise a few workshops and laboratories for the practical training of the midshipmen. Their equipment, however, requires urgent amending, in spite of the fact that some items have been received under the IMO project. The curriculum is similar to the BPLP Semarang, however it does not fully reflect the IMO standards at present.

The theoretical and practical training is performed by 23 full-time lecturers and 37 part-time lecturers.

The educational system until 1983 concentrated on the training of MPI and AMK-IS only, and the nearby Rating School in Barombong dealt with the training of ratings.

Since 1983 the BPLP Ujung Pandang started with the pure training of midshipmen (MPB III / AMK-A), upgrading courses or courses for higher grades, such as MPB II etc.

are not held at this institute. All examinations are performed at the BPLP itself.

#### **1.2.2. College of Merchant Marine Education and Training (BPLP) in Semarang, Central Jawa.**

The BPLP Semarang is also a governmental institute of the Merchant Marine for training of midshipmen and lower grades. The institute was established in 1974. The whole campus comprises 61,000 sqm.

The BPLP Semarang has a range of laboratories and workshops which could provide good practical training. However, the available equipment is of a low standard and not sufficient for the training of midshipmen, let alone the updating of officers and engineers.

Here, too, some items were provided by the IMO projects, but have to be considerably supplemented. The curriculum is set up well, although it does not fully reflect the IMO standards at present.

The theoretical and practical training is performed by 71 full-time lecturers and 11 part-time lecturers.

The education system is completely in compliance with the system used at the PLAP Jakarta. All examinations are done by BPLP itself and the final evaluated examination papers are sent to the Examination Committee in Jakarta for the issue of the certificate.

#### **1.2.3. Institute of Maritime Refreshing and Advanced Course (BP3IP) in Jakarta.**

BP3IP is a government institute for education, upgrading

and refreshing of seafarers. It was founded in 1960. The facility is relatively small and does not allow major extensions. The institute has no workshop, library and laboratory or any equipment, therefore, practical training is performed, against payment, at the Institute of Merchant Marine Education and Training (PLAP).

The maximum capacity of BP3IP cannot be clearly defined as there are no constraints concerning dormitories, workshops and laboratories. The performance of courses comprises just classroom teaching.

The curriculum is carefully carried out, although it does not completely reflect the IMO standards. The classroom teaching is performed by 50 part-time lecturers, no full-time lecturer is available.

BP3IP provides upgrading courses for deck officers and engine room-officers. The qualification required for the students for MPI,MPB III, AMK-IS and AMK-A is approved sea-service.

The courses for these lower grades last for 6 months and can be held twice a year, depending on the demand and the available financial means. The students for MPB I / AMK-C and MPB II / AMK-B require the respective lower certificate and sea-service. The courses last for 6 months, too, but will be extended to 9 months in the future.

BP3IP is at present the only institute in Indonesia conducting courses for the high certificates of MPB I and AMK-C.

#### **1.2.4. Institute of Merchant Marine Education and Training**



(PLAP) in Jakarta.

Detail information about this Institute can be explicitly learned in Chapter III.

### **I.3. PROBLEM AND ITS BACKGROUND**

The human element is one of the most important assets that influences the implementation of the Indonesian maritime activities. Without educated and well-trained maritime personnel, no plan can be put into practice and no objective can be effectively achieved. It is true not only of people in government who are responsible for matters related to shipping industries, and shipping company executives, but also of marine personnel who work on board vessel as well.

One of the human resource development activities in the maritime sector is education and training of seafarers. Education itself has three objectives 1) namely :

(i) Cognitive : Objectives which emphasize remembering or reproducing something which has presumably been learned, as well as objectives which involve the solving of some intellectual task for which the individual has to determine the essential problem and then reorder given material or combine it with ideas, methods, or procedures previously learned. Cognitive objectives vary from simple recall of material learned to highly original and creative ways of combining and synthesizing new ideas and materials. We found that the largest proportion of educational objectives fell into this domain.

(ii) Affective : Objectives which emphasize a feeling

tone, an emotion, or a degree of acceptance or rejection. Affective objectives vary from simple attention to selected phenomena to complex but internally consistent qualities of character and conscience. We found a large number of such objectives in the literature expressed as interests, attitudes, appreciations, values, and emotional sets or biases.

(iii) Psychomotor : Objectives which emphasize some muscular or motor skill, some manipulation of material and objects, or some act which requires a neuromuscular coordination. We found, they were most frequently related to handwriting and speech and to physical education, trade, and technical courses.

In order to obtain those objectives, the educational process which are performed by the education institute must be supported by a professional management. Every formal organization no matter whatever its purpose carries out management, therefore, management came to be recognized as a distinct and identifiable discipline by emphasizing the most efficient utilization of human effort and by facilitating resources. Organization itself consists of two kinds of elements common to all organization namely persons as the core element and resources as the working element. 2)

Organization resources such as men, money, materials, and method. Materials and method are called non-human resources, but men are the core element of organization that appears again as the working element.

The first problem for any organization is to provide itself with the materials and facilities that will be used to accomplish its objectives. That is to say resources

have to be directed and optimally used, if they are not, they cannot support the management in achieving the objectives.

The Indonesian Institute of Merchant Marine Education and Training (PLAP) is, of course, an organization which has a specific objective. That objective is to educate and train midshipmen. The PLAP could fulfill the training demand of seafarers who have skills and qualifications they need for a particular activity or job.

The PLAP is living and developing in a developing society. It has to meet not only what its society needs but also what the Government wishes. However, the PLAP as a governmental institute has to be improved and developed by the Government.

The main reasons for that idea are as follows : 3)

(i) The Government has firstly to make the assessment as regards the man-power needs in the maritime sector, secondly to plan for and ensure the availability of such man-power, both in quantity and quality, and lastly the optimum utilization of such man-power to national advantage.

(ii) The Government has to meet international obligations as regards International Maritime Conventions, especially international standards for the competency/proficiency of its seafarers.

As described earlier, that organization achieves its goals by utilizing human and non-human resources. Based on this philosophy, those resources at the PLAP can be classified as follows :

(1) Human resources :

- (a) Management which consists of people who have their functions in the PLAP organization structure;
  - (b) Group of lecturers and instructors who teach and train midshipmen/cadets;
  - (c) Examinators.
- (2) Non-human resources :
- (a) Education and training facilities, such as classrooms, libraries, laboratories, workshops, buildings etc.
  - (b) Education and training equipment, such as Computers, films, teaching materials, overhead projectors etc.
  - (c) Curriculum which is set up to meet the educational objectives planned.
  - (d) System of examination.

The problem which is going to be studied and discussed in this thesis is "Are those human and non-human resources sufficient and well managed to achieve the PLAP's objectives ?".

#### **I.4. SCOPE AND LIMITATION OF STUDY**

It is impossible to describe and discuss about education and training of Indonesian seafarers as a whole from every point of view. Therefore, in this thesis, the author would like to make limitation of the study which will be focused and emphasized on :

- (i) the organization and its functions of the PLAP,
- (ii) the educational system, curriculum, training facilities and training equipment of the PLAP,
- (iii) the lecturers and instructors who are involved in

the process of education and training of midshipmen at the PLAP, including training of lecturers, up-dating of their knowledge and development of their qualifications  
(iv) the efforts that should be made by the Government for the improvement the PLAP to conform with the international standards and to meet the future training demand of seafarers.

## **I.5. OBJECTIVE AND RESEARCH METHOD.**

I.5.1. The objective of this project is to analyze the present condition of the Indonesian Institute of Merchant Marine Education and Training (PLAP) which is part of the Maritime Training Programme of the Ministry of Communications as a whole.

The deficiencies of the PLAP's training facilities and training equipment, curriculum and qualifications of lecturers are the basic points in coming into the conclusion and suggestion which are proposed to be taken into consideration by the Education and Training Board, Ministry of Communications in order to improve the PLAP.

### **I.5.2. Research method**

#### **(i) Library research.**

This research method was done by collecting secondary data which has been collected before by the other researchers and published in scientific media. The author has collected some important related information and data from the library of World Maritime University, such as text books, reports, magazines, literature and others which are important and useful relating to this thesis.

#### **(ii) Field research.**

This research method was done by collecting primary data which is the original data collected in the field by the author himself. This research has been done in the author's country (Indonesia) during winter break from 7th December 1988 to 4th February 1989 and at the United States Merchant Marine Academy, Kings Point - New York during which the author carried out job training from 3rd to 28th April 1989, at which time, the author investigated by using qualitative methodology and direct observation, in-depth interviews and field work. This investigation enabled the author not only to obtain data but also a deeper insight and interpretative look at the nature of reality.

On the other hand, the author also uses quantitative methodology which is developed in terms of structure, design and analytical tools to enable him to draw quantitative inferences.

All those are very useful to support the analysis and in coming to a conclusion of the subject discussed.

#### **I.6. STAGES OF CONTENT.**

This thesis is divided into five chapters which can be specified as follows:

**Chapter I** deals with the introduction in order to describe the Indonesian Educational System, governmental institutes of merchant marine education and training, its problems and background, scope and limitation of study, and stages of content.

**Chapter II** deals with the United States Merchant Marine

Academy, as an example. This chapter describes the main functional tasks, organizational structure, the educational system and curriculum, training facilities and training equipment, and the lecturers and instructors.

**Chapter III** deals with the Indonesian Merchant Marine Education and Training (PLAP), which describes its main functional tasks, organizational structure, the present educational system and curriculum, the present training facilities and training equipment, and the present situation of lecturers and instructors. This chapter also briefly discusses the comparison of those above with those at the United States Merchant Marine Academy.

**Chapter IV** deals with the planning and efforts of the Indonesian Government to improve the PLAP by taking some actions which are done and are going to be done, such as: the improvement of the educational system to meet the International Convention on STCW 1978, the need of training facilities and training equipment to conform with the STCW 1978, and the establishment of the new Maritime Institute to meet future training demands.

**Chapter V** consists of Conclusions and Suggestions.

**FOOTNOTES TO CHAPTER I :**

- 1) Krathwahl and Bloom, **Taxonomy of Educational Objectives**, Longman Group Limited, London, 1973, p.6 - 7.
- 2) P.Houssin, **Principles of Management**, Hand outs, 1988, p.4 - 6.
- 3) P.S. Vanchiswar, **Establishment Administration of Marine Affairs with particular reference to developing countries**, Hand outs, 1987, p. 112.



## CHAPTER II

### THE UNITED STATES MERCHANT MARINE ACADEMY, AS AN EXAMPLE

The United States Merchant Marine Academy (USMMA) is one of the American academies which is fully supported by the Federal Government. It is different with the six State Maritime Colleges which are component units in a state systems of higher education. The six State Maritime Colleges are principally sponsored by the State Government. The colleges receive considerable financial support from the United States Maritime Administration, the U.S. Navy, and other diverse federal agencies and from student tuition and fees. 1)

In order to get a fair comparison with the Indonesian Institute of Merchant Marine Education and Training (PLAP), which is also fully supported by the Indonesian Government, the author has chosen the USMMA as an example in discussing some problems the PLAP is facing. Up to 1981 the PLAP educational system was based on the USMMA. 2)

The author is interested in how the USMMA maintains itself as a viable institution that has begun to deemphasize the nautical-vocational component of its educational programs and instead trains midshipmen for land-based maritime careers with increased stress on vocational skills and general education. By its own initiative, then, the USMMA has radically altered the nature of the training it provides.

The USMMA as one of seven institutions which train people to become American seafarers have changed the symbolic definition of its graduates from merchant marine officers to college graduates capable of entering a variety of land-or sea-based careers.3)

In order to learn further detail about the USMMA, the author will only describe the main subject parallel with the limitation of study mentioned in Chapter I.

## **II.1. ORGANIZATIONAL STRUCTURE AND ITS MAIN FUNCTIONAL TASKS**

Organization come in different sizes and shapes. Organizational structure can be an important managerial resource which facilitates managers to grant subordinates the authority to make decisions and improve their ability to achieve their objectives.

The dynamic form of an organization is Management which has a basic task to achieve programmatic objectives. Managers do organize to achieve the organizational objectives, but management resources are both limited and scarce. 4)

Those propositions above are also conducted at the organization of the USMMA as one organization unit within the Maritime Administration, U.S. Department of Transport.

The Manual of Orders of U.S. Maritime Administration No. 150 - 1 dated 1 February 1988 5) explains each academy unit and their functional tasks. The explanation about it

is divided into five sections as follows:

#### **II.1.1. Section 1. Organization.**

The USMMA is lead by a Superintendent who directs and supervises it and is responsible to the Maritime Administrator.

The organizational structure and line of authority of the USMMA are depicted in the attached organization chart exhibited in Annex 5.

#### **II.1.2. Section 3. Immediate Office of the Superintendent.**

The Immediate Office of the Superintendent shall be responsible for planning and directing the activities of the USMMA.

In performing his functions, the Superintendent is assisted by the Chief of Staff.

##### **II.1.2.1. The Chief of Staff.**

The Chief of Staff or Deputy Superintendent as a personal assistant to the Superintendent shall be responsible for the following :

(i) As delegated by the Superintendent, acting for the Superintendent on matters encompassing the academic regimental and administrative functions of the USMMA. Conducting special studies and providing advice concerning issues raised by operating personnel.

(ii) Sharing responsibility for institutional advance planning, including anticipating future requirements for physical plant structures and facilitating to accommodate changing trends and broader fields in maritime education and training, as well as academic advances.

(iii) Acting for and supporting the Superintendent in

providing information about Academy missions, initiative and programmes to high level government officials, educators, and high ranking military officers.

(iv) Initiating and maintaining high level contacts with officials at the other service academies to exchange views and facilitate a coordinated approach to matters of common interest.

(v) As delegated by Superintendent, coordinating Academy wide operations, facilities, security, safety, community relations, support of the Chaplains and Chapel activities, and support of tenant activities. As directed, prioritizing budget and or staffing requirements, according to perceived need, and participating fully in staffing and personnel planning.

#### **II.1.2.2. The Waterfront Activities Office.**

Under the direction of an Office Director, shall be responsible for the custody, maintenance, and cooperation of all small craft assigned to the Academy and the Academy training ship, operation of the piers, workshop, marina-type buildings associated with the waterfront activity. The waterfront Activities Office shall also be responsible for administration of the sailing programme, including midshipmen sail training and competition.

#### **II.1.2.3. The Admission Office.**

Under the Director of Admissions shall provide for the admittance of midshipmen to the Academy in accordance with criteria approved by the Maritime Administrator, conducting studies of the validity of existing criteria for admission, when appropriate.

#### **II.1.2.4. The External Affairs Office.**

Under the direction of an Office Director, shall :

(i) Maintain liaison with alumni group for the benefit of the Academy, conduct activities toward obtaining suitable maritime employment for graduates of the Academy, maintain up-to-date records of graduates, and prepare studies and reports of their employment status.

(ii) Coordinate Academy functions and activities involving dignitaries, the Congressional Board of Visitors, and the Advisory Board.

(iii) Provide through the Career Development Officer career counseling to midshipmen and assistance to graduating seniors in finding maritime employment which fulfills their statutory service obligation.

(iv) Coordinate the Academy's midshipman counseling services to ensure the midshipmen have an effective integrated counseling system available to them.

#### **II.1.2.5. The Director of Computer Resources.**

He shall plan and coordinate all the Academy's automatic data processing and academic computing requirements.

#### **II.1.2.6. The Chaplain's Office.**

Chief of Chaplains shall provide a programme of religious and spiritual activities for midshipmen.

#### **II.1.3. Section 4. Assistant Superintendent for Administration.**

The Assistant Superintendent for Administration, with the assistance of the Deputy Assistant Superintendent for Administration, shall be responsible for planning, directing and supervising all administrative functions and services necessary for the efficient management and operation of the Academy. Under the Assistant Superintendent for Administration, there are eight

organization components, namely:

**II.1.3.1. The Department of Administrative Services.**

Under the direction of a department head, shall provide for administrative services to include : transportation, custodial, and laborer services, personal property management, property disposal, imprest funds, office services, travel, mail and telecommunications, printing, forms, and report control, records management, and organization and methods studies.

The Head, Department of Administrative Services, shall also be responsible for management oversight of the Ship's Service Activity, except for those responsibilities assigned to the Department of Budget and Accounts in II.1.3.2. below.

**II.1.3.2. The Department of Budget and Accounts.**

Under the direction of a department head (Budget and Accounting Officer), and the assistance of an assistant department head (Chief of the Fiscal Control staff), shall develop fiscal plans for annual and special budgetary requirements of the Academy, prepare the Academy's budget requests and justifications, and execute funded fiscal plans, including the appropriated and reimbursable accounts. The department also provides all accounting services, including certification and processing of public voucher for payment, maintains accounting records on midshipmen accounts, maintains the official books of account and prepares financial reports therefrom and oversees and provides technical guidance on accounting and internal financial controls of non-appropriated funds at the Academy ( including the Ship's Service Activity).

**II.1.3.3. The Department of Procurement.**

Under the direction of a department head (Chief of Contracting Officer), shall provide for the procurement of supplies, equipment, and services.

#### **II.1.3.4. The Department of Maintenance and Repair.**

Under the direction of a department head, is responsible for building and ground maintenance and repair functions which are performed by the craft trade. The department also provides the on-side contracting officer's technical representative to monitor performance under contracts awarded for maintenance and repair. The Department shall coordinate its activities with the Department of Engineering Resources as appropriate.

#### **II. 1.3.5. The Department of Engineering Resources.**

Under the direction of a department head, shall provide professional civil engineering-type services and support including engineering design services for the construction, renovation, and certain other physical plant projects. The Department coordinates with the Department of Maintenance and Repair, as appropriate.

#### **II. 1.3.6. The Department of Public Safety.**

Under the direction of a department head, with the assistance of an assistant department head, shall be responsible for all occupational safety and health programmes and related matters including coordinating construction safety, investigating accidents, directing appropriate corrective action, and ensuring compliance with applicable directives and programme requirements. The Department is also responsible for physical security, fire protection, traffic control, liaison with local and Federal Law enforcement under 46 CFR Part 386.

#### **II.1.3.7. The Commissary.**

Under the direction of the Food Service Officer, provides for all food and related commissary facilities, equipment, and services contract in order to feed the Regiment of Midshipmen and the tenant agency personnel at the Academy. The Food Service Officer is the contracting officer's technical representative on the food service contract.

#### **II.1.3.8. The Personnel Office.**

Under the direction of the Personnel Officer, provides for the necessary personnel services including but not limited to recruitment, processing personnel actions, employee relations, training, technical advice on labor-management negotiations, incentive awards, and coordination of such matters with the headquarters' Personnel Officer.

#### **II.1.4. Section 5. Assistant Superintendent for Academic Affairs.**

The Assistant Superintendent for Academic Affairs (Academic Dean), with the assistance of a Deputy Assistant Superintendent for Academic Affairs (Associate Academic Dean), shall be responsible for developing, recommending, administering, and directing the academic program of the Academy.

The Assistant Superintendent for Academic Affairs shall be responsible for :

- (i) Developing academic policy and curricula to implement that policy.
- (ii) Administering faculty affairs, including the selection, orientation, supervision, guidance, and career development of the faculty.



- (iii) Controlling and evaluating the instruction, testing, and grading of midshipmen, including evaluation of instructor and student performance.
- (iv) Providing academic education necessary to qualify midshipmen to receive the Bachelor of Science Degree in accordance with standards of the Middle States Association of Colleges and Schools.
- (v) Providing naval science training, in accordance with requirements of the Department of the Navy, to qualify graduates as Naval Reserve Officers.
- (vi) Providing technical education necessary to qualify graduates to serve as licensed merchant marine officers in accordance with U.S. Coast Guard requirements.
- (vii) Providing a programme of on-the-job training aboard ships for midshipmen.

Under the Assistant Superintendent for Academic Affairs, there shall be the following academic departments each under the supervision of a department head assisted, except for the Department of Shipboard Training, by an assistant department head :

**II.1.4.1. The Department of Marine Transportation** shall provide for the teaching of practical and theoretical subjects relating to navigation, seamanship, ship operations, maritime law, economics, management, and marine transportation.

**II.1.4.2. The Department of Engineering** shall provide for the teaching of practical and theoretical marine engineering and related subjects, including basic theory and application of digital and analog computers.

**II.1.4.3. The Department of Mathematics and Science** shall

provide for the teaching of the mathematics and science phase of the curriculum.

**II.1.4.4. The Department of Humanities** shall provide for the teaching of the liberal art of the curriculum.

**II.1.4.5. The Department of Naval Science** shall provide for the teaching of the naval science phase of the curriculum.

**II.1.4.6. The Department of Athletics and Physical Education** shall administer the intercollegiate, intramural, and recreational programmes and provide for the physical training of midshipmen. The Department Head, as Athletic Director, reports directly to the Superintendent in matters related to the administration and direction of the Intercollegiate Athletic Programme.

**II.1.4.7. The Department of Shipboard Training** shall develop, supervise, and coordinate the internship and at-sea training programmes for midshipmen. Within the office are three Academy training representatives stationed at New York - New York, New Orleans - Louisiana, and San Francisco - California.

In addition, under the Assistant Superintendent for Academic Affairs, there shall be the following offices:

**II.1.4.8. The Registrar's Office**, under the direction of a Registrar, shall register and assign midshipmen to classes, issue degrees, and grant retroactive degrees in accordance with applicable regulations, and maintain student academic records.

**II.1.4.9. The Library**, under the direction of an

Administrative Librarian, shall provide necessary audio-visual services and library services to midshipmen, faculty and staff.

#### **II.1.5. Section 6. Assistant Superintendent for Regimental Affairs.**

The Assistant Superintendent for Regimental Affairs (Commandant of Midshipmen), with the Assistance of the Deputy Assistant Superintendent for Regimental Affairs (Deputy Commandant), shall be responsible for developing, recommending, administering, and directing the regimental program of the Academy and the Academy's Department of Health Services. The Assistant Superintendent for Regimental Affairs shall serve as the Dean of the students and shall be responsible for :

- (i) Developing regimental policy and a program of self government, discipline, and military-type organization to implement that policy.
- (ii) Controlling and evaluating the military or regimental instruction, testing, and grading of midshipmen, including evaluation of company officers and student performance, within the regimental program.
- (iii) Ensuring the adequacy of the midshipmen quarters, clothing, food, and related commissary services.
- (iv) Providing and directing a program of social and non-athletic recreational activities for midshipmen.
- (v) Maintaining midshipmen records (except academic records).
- (vi) The processing of midshipmen applications for certificates, licenses, and commissions.
- (vii) Overseeing the operation of the Department of Health

Services, which, under the direction of a department head (Chief of Medical Officer), shall be responsible for providing, coordinating, and recording medical and dental care and treatment for midshipmen. Medical care and/or transportation to a local hospital may be provided to others on an emergency basis.

Based on their main tasks, every department and office within the USMMA organization structure, cooperates to achieve the ultimate goal and to perform the mission of the Academy.

The Academy mission is : 6)

(i) to serve the economic and national security interests of the United States and to foster a strong, competitive and save American merchant marine through nationwide recruitment, training and graduation of outstanding young Americans with definite ambitions to serve as merchant marine officers and Navel Reserve officers.

Secondarily, to be a prime source of leadership for maritime America; to provide its midshipmen with both the academic and practical shipboard training which will prepare them, upon graduation, for immediate employment as watchstanding third mates and/or third assistant engineers on U.S. flag merchant vessels, and to be naval officers commissioned at graduation as Ensigns in the U.S. Naval Reserve.

(ii) to give them the sound education in theory underlying the skill required of a ship's officer so that they may qualify for positions of greater responsibility aboard ship and may be able to utilize and contribute to the rapidly changing management technology and transportation

systems in maritime field,

(iii) to offer them the broadest possible program of general education consistent with the professional character of the Academy's mission;

(iv) to provide them with a sound background in management and technical skills so that, after serving at sea, they can be promoted to leadership positions ashore where they can further guide and direct the development of the nation's merchant marine, maritime industry and intermodal transportation systems;

(v) to develop in them the qualities of self-discipline, responsibility and leadership for effective citizenship and successful maritime careers in both peace and war;

(vi) to set an international standard of excellence in maritime training that may be made available to citizens of other nations, in limited numbers, when deemed to be in the interest of the United States.

## **II.2. EDUCATIONAL SYSTEM AND CURRICULUM.**

The USMMA academic year is divided into four academic quarters which span 11 months, generally from the last week in July to the end of June.

The Academy offers a rigorous four-year program leading to a Bachelor of Science degree, a United States Coast Guard License, and a commission as Ensign in the United States Naval Reserve.

The educational system can be divided into three parts, as explained as follows :

#### **II.2.1. The Regimental System.**

Regimental life at the USMMA is a vital part of midshipmen's total educational system, and all midshipmen are required to meet high standards of conduct and discipline.

The regimental program is carefully designed to provide midshipmen with leadership training and experience and to develop in them the qualities of self-discipline and responsibility for effective citizenship and careers as officers and leaders in the maritime industry.

The Academy strives to develop in all plebe candidates a positive attitude that will enable them to participate fully in the rewarding experience of regimental and academic life.

#### **II.2.2. The Class System.**

Fundamental to the regimental program is the class system of responsibilities, duties, and privileges.

First Classmen (Seniors), under the Supervision of the Commandant of Midshipmen and his staff, exercise command of the regiment of midshipmen.

All first classmen and some second classmen have opportunities to serve in midshipmen officers billets.

These top-ranking midshipman officers work closely with the commandant of midshipmen in formulating and carrying

out policies and procedures relating to all facets of midshipmen life. They received practical leadership experience that helps to develop self-confidence, improves their understanding of human relations, and instill in them a sense of responsibility.

The Juniors and Sophomores, called second classmen and third classmen, are primarily responsible for assisting the first class in the indoctrination and orientation of the freshmen, who are more commonly known as plebes

The class system requires that all plebe candidates conform to exacting standards of conduct and bearing in order to facilitate their transformation from plebe candidates to responsible members of the regiment.

The fourth class year under the regimental and class system will be a period of conditioning for both a life at sea and the many other undertakings that face midshipmen during their training and, afterward, as graduates.

Regimental life is a primary reason why graduates of the Academy are so highly valued by all segments of the maritime industry and the Armed Forces for their bearing, maturity and ability to get the job done.

### **II.2.3. The Program Sequence.**

All fourth classmen follow a common curriculum in the first two academic quarters. During the second quarter they decide which of the three basic curricula to follow:

- (i) Dual License,
- (ii) Engineering, or

(iii) Marine Transportation.

At the end of the fourth class year (June/July) half of marine transportation and engineering midshipmen go to sea (B-splits).

The other half go on leave, and return in July for two more resident quarters (A-splits). In December-January of the third class year, the two groups switch places.

This pattern continues in second class year.

The remain at the Academy for the next for consecutive academic quarters, and return to sea in December-January of their second class year. They return to the Academy to complete their resident curriculum as first classmen following the end of their second sea period.

The Program Sequence is drawn in **Annex 6**.

U.S. Coast Guard gives licenses for the program :

(i) Deck Officer - training in nautical science as preparation for the third mate's license examination. It is required of marine transportation majors.

(ii) Engineering Officer - training in marine engineering as preparation for the third assistant engineer's license examination. It is required of all engineering majors.

The dual license majors must take both license preparation instruction and license examinations.

#### **II.2.4. Grading.**

The Academy uses a letter-grade system which each letter grade being assigned a numerical quality-point equivalent.



The scholastic significance of the grades and related quality points equivalents are reflected in the following table :

Letter Scale	Quality-Point Value	Scholastic Significance
A	4.00	Outstanding
A -	3.67	
B +	3.33	
B	3.00	Above Average
B -	2.67	
C +	2.33	
C	2.00	Average
C -	1.67	
D +	1.33	
D	1.00	Minimum Passing
F	-	Failure
I	-	Incomplete
E	-	Exempt
W	-	Withdrawal

After fulfilling all programs mentioned above, midshipmen of the first class year as graduating students must meet the minimum requirements for graduation, as follows:

- (i) Pass the required resident and sea project courses. A four+year course of study is required by statute.
- (ii) Earn the minimum number of quarter credit hours required by the curriculum in which the midshipmen is enrolled.

- (iii) Earn a Cumulative Quality Point Average of at least 2.000.
- (iv) Pass a U.S. Coast Guard license examination, whether eligible to actually receive the license or not (in the case of foreign nationals).
- (v) Pass all required certification, e.g., Radar Certification, CPR/CPR Refresher, First Aid, Lifeboatmen.
- (vi) Apply for, and accept it offered, a commission in the U.S. Naval Reserve.
- (vii) Pass the Academy physical fitness test.

#### **II.2.5. Ship Board Training Program.**

As part of their professional training, each midshipman participates in a cooperative educational program consisting of two quarters of the sophomore year and two quarters of the junior year at sea aboard commercially operated merchant ships.

Every effort is made to assign midshipmen to several different vessels during their two periods of training. They thereby become familiar with the performance and operating characteristics of various classes of ships and with the diverse operating requirements of different trade routes while at the same time gaining valuable practical experience in the performance of shipboard duties.

The shipboard training program provides all midshipmen with the opportunity to use a ship as a seagoing laboratory. Midshipmen are given a study guide called a 'sea project' and, in addition to performing shipboard duties, are required to complete written assignments which are submitted to the Academy for evaluation and grading. Midshipmen receive credit for courses and reports

completed as part of their shipboard training and internship during the sophomore and junior years.

### **III.3. CURRICULUM.**

The USMMA is not maintained specifically to further the interest of the sponsoring Federal Government or private shipping companies but to provide meaningful and useful training for the midshipmen themselves.

In so doing, the Academy provides general education and vocationally transferable training in an effort to ensure that there graduates will be able to find meaningful employment should they decide to pursue other careers either on land or on the sea.

The USMMA provides their midshipmen with the greatest advantages in this regard by offering a wide range of instruction in the Sciences and Liberal Arts.

The Academy also offers substantial instruction in specific marine related occupations : Oceanography, Computer Science, Marine Transportation, and others.

The Academy also awards their graduates baccalaureate university degrees which signify their general their equivalence to other college and university graduates.

In the American Schools, the curriculum is very heavily weighted in classroom instruction in technical marine subjects, nearly 60 percent of the curriculum is given over to such courses. At the same time the other three curriculum areas (mentioned below) are not ignored. Moreover, of special significance is the considerable proportion of the curriculum (almost 20%) devoted to General Liberal Studies.7)

The four curriculum areas mentioned above are specified as follows : 8)

Curriculum Areas	Percent
- General Liberal Studies	19
- Professional-Scientific Studies	10
- Marine Classroom Studies	58
- Work Simulation	13

There are specified again into each subjects group : 9)

- (i) General Liberal Studies :
  - Literature and Humanities
  - Social Studies
  - Foreign Languages
  - Physics and Mathematics
- (ii) Professional-Scientific Studies :
  - Astronomy
  - Meteorology
  - Fluid Dynamics
  - Mechanical Engineering
- (iii) Marine Classroom Studies :
  - Business Management

- International Law
- Marine Economics
- Cargo Handling
- Ship Stability
- Personnel Management

(iv) Work Simulation :

- Seamanship
- Ship Structure
- Tool Working
- Pipe Fitting
- Refrigeration
- Safety Practices

All courses which are under a common curriculum and pertaining specifically to each of the majors programs are listed separately in **Annex 7**.

There should be noted that the Maritime Administration through the U.S. Coast Guard only settles courses related to the Licenses. The development and improvement of non-licence courses is independently done by the USMMA Academic Board.

### **II.3. TRAINING FACILITIES AND TRAINING EQUIPMENT.**

The technology of maritime training in the United States is state of the art. Video tapes, film, and microfiche are employed. Calculators and microcomputers are used in problem solving.

Electronic Simulators, each a major investment, have become a corner stone of the retraining process, providing

hands-on experience. 10)

The USMMA has sound training facilities and training equipment which support effectively learning activities of its midshipmen. Here below, the author tries to describe them not in detail what they are.

(i) The Library.

The Academy's Library is an air conditioned building located between two large department buildings. It has shelves for 100,000 volumes and can accommodate 300 readers. Each floor has a book stock area with adjacent reader areas. Special collections include microtexts, charts and atlases, U.S. Government publications, archives, rare books, cassettes and phonograph records.

As part of its services, the library provides microfilm reader, microfiche readers, reader-printers and photocopiers, as well as audio equipment.

The library has also access to several computerized information services. Study facilities include carrels, seminar rooms, small group discussion rooms, faculty studies and a typing room.

(ii) The Instructional Media Unit Which is located in the library provides a wide selection of materials, equipment and services to assist in fulfilling Professors teaching requirements.

(iii) The Academy campus and facilities are comfortably accommodate an enrollment to approximately 880 midshipmen (the term is applicable to women as well men).

(iv) Around the campus centre, adjoining the sound, are grouped the following buildings and facilities : an outdoor swimming pool, a boat basin and pier facilities, housing science and engineering laboratories, humanities department classrooms, laboratories for teaching nautical science.

(v) At the centre of the Academy campus, there are the midshipmen dining room, and six dormitory buildings connected by an underground promenade which contains the midshipmen lounge and canteen, uniform and varsity shop, laundry facilities, bank, barber shop, and ship's service shop.

(vi) At the Academy's boat basin and pier area, are moored three training ships and small crafts for midshipmen waterfront daily activities. The biggest training ship 'King Pointer' has a length of 134.8 ft., a beam of 33.7 ft., and a draft of 12.36 ft. She can accommodate about 60 midshipmen for sea training.

(vii) The Academy has one sophisticated bridge simulator named the Computer Aided Operations Research Facility (CAORF). It has been operating at the Academy since 1975. Its main focus is to provide a realistic simulation of the bridge environment, ship response, and port, waterway and open ocean environment, and to investigate how these factors interact with and influence the shiphandler's ability to maneuver vessels under various conditions. The simulator has the capability to stimulate any ship model.

(ix) Each department has training facilities and training equipment, such as :

(a) Department of Mathematics and Science has :

- 2 General Physics Laboratories,
- 1 Atomic Physics Laboratory,
- 1 Nuclear Physics Laboratory,
- 1 Special Projects Laboratory,
- 2 General Chemistry Laboratories,
- 1 Hazardous Materials Laboratory,
- Physics Preparation Room,
- Chemistry Preparation Room.

(b) Department of Engineering has :

- 2 Fluids Laboratories,
- 2 Heat Transfer Laboratories,
- 2 Strength of Materials Laboratories,
- 2 Thermodynamics Laboratories,
- 1 Diesel Engine Laboratory,
- 1 Electrical Machinery, Automatic Controls, and Electrical Circuits Laboratory,
- 1 Gas Turbine Laboratory,
- 1 Introduction to Marine Engineering Laboratory,
- 1 Machine Shop,
- 1 Materials Science Laboratory,
- 1 Refrigeration and Air Conditioning Laboratory,
- 1 Steam Generation and Steam Machinery Laboratory,
- 1 Steering Gear Laboratory,
- 1 Welding and Pipefitting Laboratory.

(c) Department of Marine Transportation has :

- 1 Tanker Simulator for Handling Cargo,
- 1 Radar Generated Room,
- 12 Unit Radar Simulators,
- 1 Electronics for Navigation Room,
- 1 Radio Communication Room,
- 1 Radio RDF Room,
- 1 Sonar Room.



#### II.4. LECTURERS AND INSTRUCTORS.

IMO is concerned with maritime safety and prevention of marine pollution.

IMO objective is enshrined in a few words only 'safer shipping and cleaner oceans'.

It is recognized all over the world that to ensure safety and to prevent pollution is not merely all that equipment on board or that training equipment at school but the men behind that equipment. Men who are ashore and afloat responsible for safety. There fore in that context, training becomes very important. 11)

Officers of U.S. flag merchant vessels are also involved in transferring knowledge and applying practical skill of midshipmen when midshipmen carry out their one-year sea training.

Lecturers and Instructors ashore also have paramount role in teaching and learning activities when midshipmen attend classes and laboratories. They have to have high qualification in their professional subjects that are contributed in academic and teaching activities.

In connection to aforesaid above, the author has learned about the educational background of the USMMA Professor and Instructors. He found the fact as listed below :

Academy/College (Bachelor's - Degree)	University/ (Master's Degree)	PhD (Doctor's Degree)
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22 ( 34.40% )	28 ( 43.75% )	14 ( 21.85% )
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Source : The USMMA Catalog, 1988 - 1989, p. 116 - 122.

Among them, there are 20 people, who had been serving at sea (seafarers), and who also have professional marine licenses.

Some of them also have two master's degrees in different major studies.

## FOOTNOTES TO CHAPTER II.

- 1) William R. Rosengren and Michel S. Bassis, **The Social Organization of Nautical Education**. Lexington Books - DC. Heath and Company, 1976. p. 5.
- 2) Directorate General of Sea Communications, Ministry of Communications Republic of Indonesia, **Integrated Sea Communications Manpower Development and Training Masterplan**, Final Report, Volume 4 : Training Supply in the Maritime Sector, November 1983, p. 34.
- 3) William R. Rosengren and Michel S Bassis, **op.cit.**, p.5.
- 4) Jeffrey D. Straussman, **Public Administration**, Holt, Rinehart and Winston, 1985, p. 77.
- 5) Maritime Administration, U.S. Department of Transport, **Manual of Orders**, MAO 150-1, dtd. 11-21-85, No. 150-1, February 1, 1988, p.1 - 8. Section 2 and 7 are ignored by the author.
- 6) The United States Merchant Marine Academy, Kings Point, New York 11024, **Catalog 1988-89**, p.6.
- 7) William R. Rosengren and Michel S. Bassis, **loc.cit.**, p.79.
- 8) **Ibid.**, p. 79.
- 9) **Ibid.**, p. 82 - 83.
- 10) **Effective Manning of the U.S. Merchant Fleet Committee**

on **Effective Manning Marine Board**, Commission on Engineering and Technical Systems, National Research Council, National Academy Press, Washington DC, 1984, p. 26.

11) C.P. Srivastava, **Opening Address**, The International Maritime Lecturers Association (IMLA) in cooperation with The World Maritime University, The Third International Conference on Maritime Education and Training, 17 - 19 September 1984, Malmo - Sweden, p. 2.

## CHAPTER III

### THE INDONESIAN INSTITUTE OF MERCHANT MARINE EDUCATION AND TRAINING

The Indonesian Institute of Merchant Marine Education and Training (PLAP) was founded in 1953. It is one of the governmental nautical institutes for training of cadets and officers.

In the fifties, most of the PLAP students did not have to pay any tuition and fees, but they were bound by the Government to serve automatically as government officers after graduation.

It meant that the Government provided jobs for them and were responsible for placing them after their studies.

From 1953 to 1979 the PLAP had a name the Indonesian Merchant Marine Academy (Akademi Ilmu Pelayaran/AIP), which offered four course programs, namely:

- (i) Deck Officer course,
- (ii) Engine Officer course,
- (iii) Shipping and Port Management course,
- (iv) Radio/Telecommunications Officer course.

Those courses took four years as the courses conducted at the USMMA at present. But in 1979 there were some changes institutionally in the PLAP organization. The present organization of the PLAP is discussed in sub-chapter

### III.1.

In Indonesia, education and training activities involve several ministries. The Government considers it necessary to divide the task to improve the education and training provided by the responsible ministries to ensure a more effective implementation of Government policy in the education and training sector.

**Presidential Decree No. 34 of 1974,** Article 3 states that the responsibility for guiding of education and training is divided as follows :

- (i) The Minister of Education and Culture is responsible for the guidance of general education and teaching,
- (ii) The Minister of Manpower is responsible for the guidance of specialized training for non-public servant personnel,
- (iii) The Chairman of the National Institute of Administration is responsible for guiding the specialized training of public servants.

This Degree does not say anything about the other Ministers who operate institutes of education and training to support their sectoral need, including the Ministry of Communications which runs the PLAP.

According to this Decree, only the Ministry of Education and Culture has competency for accrediting the outputs of schools, academies and universities. Only this Ministry awards degrees for higher education graduates of the university program.

Based on this Degree, the Ministry of Education and

Culture with their letter **No. 44833/MPK/78** dated **13 June 1978**, suggested to change the function of the Indonesian Merchant Marine Academy (AIP) which conducted programs of the university study to become an institute which would only conduct programs on the non-university training. (See also Exhibition in **Annex 2**).

That is why after 1979 the institute was not called 'academy' anymore. The institute is called 'institute of merchant marine education and training', and its graduates are not awarded a Bachelor's degree. The students have to pay tuitions and fees for their three-year studies and the Government does not assist them to be employed as government officers anymore.

After considering that licensure alone does not require a college education, the Minister Education and Culture with his Degree **No. 065/U/1981 of 1981** equalizes the PLAP graduates by awarding Diploma III Strata 1 plus certificate MPB III or AMK A ( See Strata and Programs for Higher Formal Education, Annex 2).

That means the PLAP is an Institute which provides non-degree programs and its graduates are equally appreciated as academy graduates.

It means also that the Ministry of Education and Culture intervenes in formulating and organizing the Curriculum Standards for the PLAP, which do not relate with qualification and proficiency. It also means the PLAP does not have independence in formulating and applying any new curriculum without previous approval from the Ministry of Education and Culture.

With the brief explanation above, the author will discuss furthermore about the present organization and its main tasks of the PLAP.

### **III.1. PRESENT ORGANIZATIONAL STRUCTURE AND ITS MAIN FUNCTIONAL TASKS.**

The Minister of Communications Decree No. KM.27B/DT.001/ Phb.79 of 1979 states the PLAP organizational structure and its main functional tasks, as follows :

#### **Chapter I. Status, Tasks and Functions.**

##### **Article 1.**

(i) The PLAP is a technical unit of sea communications education and training within the Ministry of Communications organization, which is responsible to the Head, education and Training Board.

(ii) The PLAP is led by a Principal who carries out his tasks functionally and technically cooperates with the Head, Sea Communications Education and Training Centre.

##### **Article 2.**

The PLAP task is to perform is-service and pre-service training in nautical, ship engineering, shipping and port management, and radio electronics/telecommunications to support the mission of national sea transportation.

##### **Article 3.**

In order to perform the task mentioned in Article 2, the PLAP has the following functions :

(i) to give education and training of nautical, ship engineering, shipping and port management, and radio electronic/telecommunications, and its improvement.



- (ii) to plan the improvement and utilization of shipboard training/sea project of cadets.
- (iii) to organize programs, evaluation and program reporting systems, and to improve curriculum, system and method, and to perform teaching administration and guidance, and counseling for cadets.
- (iv) to perform general administration of personnel, finance, and household affairs.

#### **Article 4.**

- (i) Strata 1 is education and training for candidates of MPB III (Third Mate), and AMK A (Third Assistant Engineer),
- (ii) Strata 2 is education and training for candidates of MPB II (Second Mate), and AMK B (Second Assistant Engineer),
- (iii) Strata 3 is education and training for candidates of MPB I (Master), and AMK C (Chief Engineer).

#### **Chapter II. Organization.**

##### **Article 5.**

The PLAP consists of :

- (i) Administration Division,
- (ii) Department of Education and Training Facilities,
- (iii) Department of Education Development.
- (iv) Faculty and staff,
- (v) Installation.

##### **Chapter 6.**

The Administration Division has the task to perform the administration of personnel, finance and household affairs.

##### **Article 7.**

In order to perform the task mentioned in Article 6, Administration Division has the following functions:

- (i) to administer general affairs, personnel affairs, and public relations.
- (ii) to administer financial affairs.
- (iii) to administer home affairs, logistic/materials, and maintenance.

**Article 8.**

The Administration Division consists of :

- (i) General Affairs Sub-Division,
- (ii) Finance Sub-Division,
- (iii) Household Sub-Division.

**Article 9.**

- (i) The General Affairs Sub-Division has the task to administer general affairs, personnel affairs, and public relations.
- (ii) The Finance Sub-Division has the task to administer financial affairs,
- (iii) The Household Affairs Sub-Division has the task to administer household affairs, logistic and materials, and maintenance services.

**Article 10.**

Department of Education and Training Facilities has the task to plan the improvement and utilization of on board training/sea project of cadets and to register cadets to on board training and maintain their records.

**Article 11.**

In order to perform the task mentioned in Article 10, the Department of Education and Training Facilities has the following functions :

- (i) to plan the improvement and utilization of training equipment and training facilities.
- (ii) to assist the cadets in finding shipboard training/sea project on board of merchant vessels and at ports.
- (iii) to register and maintain cadet academic records.

**Article 12.**

The Department of Education and Training Facilities consists of :

- (i) Training Facilities Section,
- (ii) Shipboard Training/Sea Project Section,
- (iii) Documentation and Library Services Section,

**Article 13.**

- (i) Training Facilities Section has the task to formulate the development program and utilization of training equipment and training facilities,
- (ii) Shipboard Training/Sea Project Section has the task to organize shipboard training/sea project on board merchant vessels or at ports.
- (iii) Documentation and Library Services Section has the task to organize and maintain documentation of cadet academic records, and to provide library services.

**Article 14.**

The Department of Education Development has the task to organize programs, and program evaluation reports, to prepare and improve curriculum, educational system and method, to perform teaching and student guidance administration.

**Article 15.**

In order to perform the task mentioned in Article 14, the

Department of Education Development has the following functions :

- (i) to organize education and training programs, to evaluate and report the programs executed, and to prepare and improve curriculum, educational system and method.
- (ii) to manage teaching activities.
- (iii) to guide and counsel cadets, and to conduct additional lectures for cadets.

**Article 16.**

The Department of Education Development consists of:

- (i) Education and Evaluation Program Section,
- (ii) Teaching Administration Administration Section.
- (iii) Student Affairs Section.

**Article 17.**

- (i) Education and Program Evaluation Section has the task to organize education and training program, education and training evaluation, and to prepare curriculum, system and method, and their improvement.
- (ii) Teaching Administration Section has the task to manage teaching activities, and to provide for the admittance of cadets to the PLAP.
- (iii) Student Affairs Section has the task to provide counseling and assistance to cadets, and to manage the additional lectures for cadets.

**Article 18.**

- (i) Faculty and staff consists of Professors and Instructors. It has the task to deliver lectures and instructions on nautical, ship engineering, shipping and port management, radio electronic/telecommunications, and their improvement.
- (ii) The Faculty is divided into groups by which a group

Chairman manages teaching activities of his members in accordance with their major studies.

(iii) Each group is led by a senior Lecturer appointed by the Principal.

(iv) The Number of Faculty members is based on workloads principle.

#### **Article 19.**

(i) Installation which is mentioned in Article 5.(v) is a supporting facility at the PLAP consisting of Dormitory, Laboratory, Workshop, and Training Ship..

(ii) Dormitory is the building in which the cadets live for development their self-discipline, sense of pride and esprit de corps.

(iii) Laboratory is equipment where the cadets do basic experiment in nautical, technical and radio telecommunications.

(iv) Workshop and Training Ship are facilities in which the cadets do practical training in nautical, technical and radio telecommunications.

The organization chart of the PLAP is displayed in **Annex 7.**

Based on the PLAP tasks and main functions described above, the PLAP mission is : 1)

- to educate young Indonesian people who wish to devote their time and to serve in a maritime career by becoming professional merchant marine officers,
- to train them to be creative, productive, expert and skillful to fulfill the national development duties in

the maritime field, and

- to prepare them to be able to perform the governmental duties after serving at sea and becoming government officials or managers of shipping companies.

After comparing the PLAP organization and its mission with the USMMA organization and its mission, it seems that the PLAP organization and its mission is considerably simpler than the USMMA.

### **III.2. PRESENT EDUCATIONAL SYSTEM AND ITS CURRICULUM.**

Although the Minister of Communications Decree No. 278/OT/Phb.79 mentions that the PLAP conducts courses on :

- (i) Nautical course,
- (ii) Marine Engineering course,
- (iii) Shipping Management course,
- (iv) Radio Electronics/Telecommunications course;

the two courses mentioned latter were not conducted anymore due to some reasons which are discussed in Chapter IV, therefore, the PLAP up until now educates and trains cadets in Nautical course and Marine Engineering course.

That Degree also says that the PLAP conducts training courses for candidates seeking the higher Diploma of Strata 2 and Strata 3, but after 1987, those courses were not conducted anymore by the PLAP. The Institute only holds courses for candidates of Strata 1.

For Seafarers who want to obtain higher qualifications or licenses, for example from MPB III (Third Mate) to become MPB II (Second Mate) or from AMK A (Third Assistant

Engineer) to become AMK B (Second Assistant Engineer), they can obtain those licenses after schooling at the Institute of Maritime Refreshing and Advanced Course (BP3IP) and after passing the examinations conducted by the Examination Committee, Directorate of Sea Communications.

### **III.2.1. The Regimental System.**

Regimental life at the PLAP is basically the same as at the USMMA. Cadets (Taruna = Indonesian) are not only students in the Education and Training Institute of the Ministry of Communications, but also a select group of students comprising the PLAP's Regiment of Tarunas.

The regiment is predicated on a social structure relying on community (regimental) obligations whose purpose is to bring out the moral and ethical strengths of the individuals while simultaneously developing a strong sense of comradeship, responsibility, pride and professionalism.

The embodiment of the regimental way of the Taruna corps is the development of leadership skills that are necessary for an individual entering the maritime industries after graduation.

Newly admitted Tarunas are required to attend an indoctrination period for introduction to the institute, its organization, the regiment and their obligations as Tarunas.

### **III.2.2. The Class System.**

The PLAP acts according to the principle that all cadets have to live compulsorily in the dormitories of the facility.

For the training purpose and further development of a sense of self-discipline, the student body is organized into classes. The Corps of Tarunas is under the Direction of the Office of Education Development Division, which is responsible for the character, leadership and physical development of the Corps.

The Corps is organized into three classes :

- (i) First year class,
- (ii) Second year class, and
- (iii) Third year class.

The Tarunas of the third year class command as seniors both the second and first year class. They are responsible to a Regiment Officer and Taruna Sub-Division Officers.

Class activity here is provided in this manner so that the young men (all the PLAP cadets are men) of the Institute may experience first hand chain of command found aboard ship as well as gaining hand experience in the management and leadership of personnel.

### **III.2.3. The Program Sequence.**

The educational system for the training of the cadets consists of the following program sequence :

- (i) Three semesters at the Institute,



- (ii) Interim examination,
- (iii) Two semesters seabased training on board merchant vessels,
- (iv) One semester at the Institute,
- (v) Final License examination.

In the first three semesters they gain knowledge and skill from the classes, laboratory, simulation training, and workshop. After they finish the third semester they go on board merchant vessels for shipboard training/sea project on which they get additional knowledge about the application of theories, carry out applied research, implementation of ship regulations and shipboard management etc.

During their sea term, they will spend more time working with the ratings learning the basics of seamanship (or the engine room). As they gain more experience, and time for their examinations come closer, they will spend more time working with the officers, learning from them.

They return to the Institute to complete their resident curriculum for the sixth semester in which they get evaluation, enrichment and mastering programs.

All examinations are done by the PLAP themselves without participation of the Examination Committee. If the candidate has passed the examination, a Diploma is handed out and afterward, on the basis of the same examination, the Certificate is issued by the Examination Committee.

The problems the Institute is facing in maintaining this program sequence are :

- (i) inadequacy in providing training instruments such as laboratory, workshop and simulator,

- (ii) shortage of national merchant vessels for seabased training aggravates the former situation mentioned before.

### III. 2.4. Grading.

Alphabetical grades are assigned cadets according to the following scale for each academic subject :

---

Alphabetical Grade	4.0 Equivalent	Percent Equivalent
A	4.0	90 - 100
B	3.0	80 - 89.9
C	2.0	70 - 79.9
D	1.0	60 - 69.9
F	0.0	below 60
I (Incomplete)	-	-
E (Exempt)	-	-

---

After fulfilling all programs mentioned above, cadets of the third year as graduating students must meet the requirements for graduation as follows :

- (i) Earn the minimum number of Semester Credit Units required by the curriculum (116 SKS) in which the cadet is enrolled,
- (ii) Earn a Cumulative Quality Point Average of at least 2.000 or 60%.
- (iii) Pass all required certifications, e.g. Sea Survival, Fire Fighting, Radar Observer and The

National Ideology (P.4.) upgrading course.

- (iv) Graduates who are accepted for serving in Military Service/National Service, have to complete their application for it to the Ministry of Defense.

### **III.2.5. Sea Based Training.**

According to the educational system, the cadets have to participate in a one-year sea based training after finishing studies in the third semester at the Institute.

The purpose of sea based training/shipboard training at the PLAP is basically the same as at the USMMA. The difference is only that the cadets at PLAP perform it for the whole year (fourth and fifth semesters on board) without interrupting their shipboard training.

The present system is good in order to overcome difficulties in getting merchant vessels due to the shortage of the national fleet.

The facts show that :

- (i) the cadets often have several months' waiting time for this training which delays a continuous performance of the whole education.
- (ii) the juniors, in some cases, could possibly finish their sea based training earlier than the seniors. The cadets are allowed to make any direct contact shipping companies.
- (iii) there is no clear organizational procedure for application (the PLAP contacts Sea Communications Education and Training Centre or Shipping Lines

directly ?).

- (iv) there are some vacancies on board which are not effectively utilized.

An evaluation of these statements results in the fact that the present organization of allocation of sea based training on board the vessels provides a tremendous obstacle within the system and should be revised completely.

Therefore, the program sequence as drawn in Annex 8 cannot be consecutively followed by the cadets.

The PLAP Management tries its best to assist cadets by contacting Shipping Lines, but the queue of waiting cadets is still too long.

The unavailability of training ship for them creates a disadvantage for their studies, due to the fact that while at sea the cadets will have a learning advance over ratings who wish to study for a certificate.

They also will have a mixed experience of working with the ratings. As a rating, and working with the officers as an officer-in training. 2)

#### **II.2.6. Curriculum.**

Curriculum is also the product of the history of the society in which it is to be found and, in particular, its cultural history. 3)

The historical, social and cultural influences on the curriculum offer a fascinating subject for study and must not be ignored by those who plan the PLAP curriculum.

The PLAP educational system and its curriculum is also a part of the national educational system. Therefore, the PLAP curriculum especially in General Basic Knowledge does not ignore the subjects dealing with the national cultural history (for example : Subject on the National Ideology - Pancasila, and on The National Heroism - Kewiraan).

The curriculum of the PLAP is weighted in classroom instruction in technical marine subjects, of which approximately 62% of the curriculum is given over to such courses. At the same time other curriculum areas are not ignored although they are given in very small proportion.

The PLAP curriculum can be generally specified as follows:

Curriculum Areas	Percent
- General Liberal Studies	10
- Professional-Scientific Studies	15
- Marine Classroom Studies	63
- Work Simulation	12

They are specified into three group : 4)

(i) General Basic Knowledge :

- National Ideology
- National Heroism
- Religion and Ethics
- Sociology and Culture

(ii) Supporting Competency Knowledge :

- Economics
- Law

- Management
- Physics and Mathematics
- Research and Methodology

(iii) Competency Knowledge :

- Navigation Studies
- Shipping Law and Shipping Business Studies
- Seamanship Studies
- Ship Safety Studies

All courses which are under a semester curriculum and pertaining specifically to each of the courses are listed separately in **Annex 10**.

It should be noted that license examination is not the authority and competency of the Indonesian Coast Guard (Directorate of KPLP), but it is the authority of the Examination Committee which is responsible to Director General of Sea Communications and for issuing all marine license certificate.

### **III.3. EXISTING TRAINING EQUIPMENT AND TRAINING FACILITIES.**

All of PLAP's facilities are limited in space and need some renovation due to age.

The PLAP has a number of workshops and laboratories which are in a fair condition.

The practical training on a demonstration basis is designed for groups of 6 - 15 students, while hands-on exercises are generally not possible.

Major workshop and labs include a newly procured radar simulator, a language lab and other technical, nautical and scientific labs and workshops with few exceptions, the lab and workshop equipment is old and needs updating.

Some new items were already received under the IMO project in 1983/84. Nevertheless, the equipment available at the PLAP is far superior to that of all the other colleges.

The training equipment and training facilities owned presently are, among others :

- (i) Four dormitory buildings can accommodate approximately 600 students,
- (ii) One sports hall for indoor activities,
- (iii) 18 classrooms have a capacity of 30 students each,
- (iv) 2 large classrooms have a capacity of 60 students each,
- (v) One drawing room has a capacity of 40 students,
- (vi) The auditorium has a capacity of 250 people,
- (vii) The library has shelves for 30,000 volumes.

Most of the volumes are old publishings. No microtexts, regular government publication, cassettes and phonograph records are provided. The library has not yet computerized information services, microfilm, microfiche as well as radio equipment.

- (viii) There are a football field, a swimming pool, tennis courts and a basket/volley-ball field inside the campus.
- (ix) There are laboratories :
  - Navigation,

- Electronics Navigation,  
Mechanics and chemistry technology,
- Radar simulator and radar observer,
- Electronics, electrics and physics laboratories,
- engine and power laboratories,
- (x) No boat basin and facilities for sail training and/  
or cadets daily waterfront activities,
- (xi) No training vessel for sail training (the USMMA  
owns some 'Kings Pointers'),
- (xii) Notably, there are no facilities for ship handling  
and maneuvering training (the USMMA owns the  
CAORF).

That is all about the PLAP's training equipment and training facilities.

An IMO official said : "I have gone round and seen and I have come back with almost a broken heart because there are shelves in libraries but hardly any books. If there are any at all, there are rather old used ones gathered from somewhere and kept there just because something has to be found in the library (. . .) I do believe that the most important single first step is to have a plan for each institution in terms of modernization of syllabi, the need for equipment, books for the library and then you can think of anything else (...)" . 5)

The other piece equipment which is needed by the PLAP is a ship handling/bridge simulator. This simulator is expected to replace the need for actual equipment on board a training ship as the PLAP does not have a training ship.

The prime reason for the use of that simulator at the PLAP is supported by the following statements :

- (i) it reduces training costs, most simulators cost



considerably less than the actual equipment they simulate,

- (ii) it is safer than training on actual equipment,
- (iii) availability, it can be located wherever needed and in sufficient numbers to meet student loads. 6)

#### III.4. LECTURERS AND INSTRUCTORS.

The most important single difficulty is that many countries of the world, in developing world, there is even now an acute shortage of qualified personnel, as they do not have enough teachers. 7)

The situation mentioned above creates questions, whether the PLAP does not have enough qualified and professional teachers, how the PLAP trains students, and how the PLAP trains them according to global standards.

The description of the PLAP lecturers and instructors and their educational background is as follows :

Academy/College (Bachelor's Degree or Strata 1)	University (Master's Degree)	PhD./ (Doctor's Degree)
30 ( 62.5% )	18 ( 37.5% )	none

Source : Employee rank list, Education and Training Board, Ministry of Communications, 1988.

Another piece of information from the table above is :

- (i) 27 of the people who have a bachelor's degree have been serving at sea and have a marine licence,
- (ii) 2 of the people who have a master's degree have also served at sea and have a marine license,
- (iii) 6 people among all the teachers have attended the Akta Teaching Qualification Program and have an AKTA-V qualification.
- (iv) None of them have two master's degrees and doctor's degree (PhD.).

### FOOTNOTES TO CHAPTER III.

- 1) **The PLAP Year Book, The 21th Graduation, 1982.**
- 2) **D.R. Avey, The Training of Ship's Officers in Canada, Fellowship Thesis for Transport Canada, Dalhousie University - Halifax - Nova Scotia, p. 2.**
- 3) **Meriel Downey and A.V. Kelly, Theory and Practice of Education, An Introduction, Second Edition, Harper Education Series, 1979, p. 199.**
- 4) **Head, Education and Training Board Decree, No. SK.10/DL.107/Diklat-85, Professional Curriculum Standards for Education and Training Institutes within the Ministry of Communications, 1985, Appendix 2a., and 2c.**
- 5) **C.V. Srivastava, Opening Address, The International Maritime Lectures Association (IMLA) in cooperation with the world Maritime University, The Third International Conference on Maritime Education and Training, 17 - 19 September 1984, Malmoe - Sweden, p. 3.**
- 6) **Greg Kearsley, Training and Technology, Addison - Wesley Publishing Company, Inc., 1984, p. 53.**
- 7) **C.V. Srivastava, op.cit., p.5.**

## CHAPTER IV

### EFFORTS FOR IMPROVEMENT

The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 was adopted by the countries forming IMO at an international conference held in London in 1978.

At that time the majority of the traditional maritime countries were rated as developed countries, possessing well establish maritime infrastructures, with education and training programs for their seafarers which could meet the majority of the Convention requirements.

Indonesia ratified the STCW 1978 Convention in 1984, but as one of many other developing countries, Indonesia still has little formal maritime infrastructure and thus the adoption of the STCW 1978 Convention appeared to present Indonesia with many problems to be overcome.

The central issue for many of the developing countries, of course also for Indonesia, was possession of an effective national legislation which, through its various sections, would control :

- (i) the levels of education, training and experience required by seafarers before the issue of certificates of competency,
- (ii) a system for the examination and certification of seafarers,
- (iii) a maritime safety administration which would deal

with ship registration, surveys, pollution control etc. 1)

Vanchiswar 2) mentions the basic problems as regards matters pertaining to maritime personnel, inter alia :

- (i) shortage (acute shortage in many countries) of marine officers with the needed qualifications and experience,
- (ii) lack of training facilities for marine officers and seamen.

Article XI of the International Conference on Training and Certification of Seafarers, 1978 explains that Parties to the Convention shall promote, in consultation with, and with the assistance of, the IMO, support for those Parties which request technical assistance for :

- (i) Training of administrative and technical personnel,
- (ii) establishment of institutions for the training of seafarers,
- (iii) supply of equipment and facilities for training institutions,
- (iv) development of adequate training programs, including practical training on sea-going ships, and
- (v) facilitation of other measures and arrangements to enhance the qualifications of seafarers 3)

What has been mentioned before is that the PLAP received training equipment under the IMO project in 1983 and 1984.

The Indonesian government also has to consult the IMO who can assist in the efforts that are being done in order to improve the PLAP's educational system, training equipment, teachers, examination system etc.

#### **IV.1. THE IMPROVEMENT OF THE EDUCATIONAL SYSTEM TO MEET THE STCW 1978 CONVENTION.**

The PLAP as an institute which produces seafarers has to improve its educational system. It will require consequently developing all the existing programs, curricula, and training facilities in order to meet the international standards.

The STCW 1978 Convention requires a minimum standards of Certificate of Competency for Deck Officers, Engine Officers, Radio Officers, and Electronic Officers.

MPB III (Third Mate - UK : Second Mate Certificate) and AMK A (Third Assistant Engineer - UK : Second Engineer Certificate) whose knowledge shall be sufficient for the officer of the watch to carry out his watchkeeping duties safely, are produced annually by the PLAP.

In determining the appropriate level of knowledge the Indonesian Maritime Administration shall take into account the remarks under each subject in the Appendixes written below : 4)

#### **Appendix to Regulation II/4.**

Minimum knowledge required for certification of officers in charge of a navigational watch on ships of 200 gross register tons or more are as follows :

- (i) Celestial navigation,
- (ii) Terrestrial and coastal navigation,

- (iii) Radar navigation,
- (iv) Watchkeeping,
- (v) Electronic systems of position fixing and navigation,
- (vi) Radio direction-finder and echo-sounders,
- (vii) Meteorology,
- (viii) Compasses - magnetic and gyro,
- (ix) Automatic pilot,
- (x) Radio telephony and visual signalling,
- (xi) Life saving,
- (xii) Fire prevention and fire-fighting appliances,
- (xiii) Emergency procedures,
- (xiv) Ship maneuvering and handling,
- (xv) Ship stability,
- (xvi) English language,
- (xvii) Ship construction,
- (xviii) Cargo handling and stowage,
- (xix) Medical Aid,
- (xx) Search and Rescue,
- (xxi) Prevention of pollution of the marine environment.

#### **Appendix to Regulation III/3.**

Minimum knowledge is required for certification of chief engineer officers and second engineer officers of ships powered by main propulsion machinery of between 750 kW and 3000 kW propulsion power.

Every candidate shall possess sufficient elementary theoretical knowledge to understand the basic principles

involved in the following subjects :

- (i) Combustion processes,
- (ii) Heat transmission,
- (iii) Mechanics and hydromechanics,
- (iv) - Marine diesel engine,  
- Marine steam propulsion plant,  
- Marine gas turbine,
- (v) Steering gear systems,
- (vi) Properties of fuels and lubricants,
- (vii) Properties of materials,
- (viii) Fire-extinguishing agents,
- (ix) Marine electrical equipment,
- (x) Automation, instrumentation and control systems,
- (xi) Ship construction, including damage control,
- (xii) Auxiliary systems.

Every candidate shall possess adequate practical knowledge, in at least the following subjects :

- (i) operation and maintenance of :
  - marine diesel engines,
  - marine steam propulsion plant,
  - marine gas turbine,
- (ii) operation and maintenance of auxiliary machinery systems, including steering gear systems,
- (iii) operation, testing and maintenance of electrical and control equipment,
- (iv) operation and maintenance of cargo handling equipment and deck machinery,
- (v) detection of machinery malfunction, location of faults and action to prevent damage,
- (vi) organization of safe maintenance and repair procedures,



- (vii) methods of, and aids for, fire prevention, detection extinction,
- (viii) regulations to be observed regarding pollution of the marine environment and methods and aids to prevent such pollution,
- (ix) first aid related to injuries which might be expected in machinery spaces and use of first aid equipment,
- (x) functions and use of life-saving appliances,
- (xi) methods of damage control with specific reference to action to be taken in the event of flooding of sea water into the engine room,
- (xii) safe working practices.

The author does not discuss the minimum knowledge required for certification of MPB II (Second Mate - UK : First Mate certificate), AMK B (Second Engineer - UK : First Engineer certificate), MPB I ( First Mate - UK : Master certificate) and AMK C (Chief Engineer - UK : Chief Engineer certificate) as those courses are functionally conducted by the BP3IP.

Beside the required knowledge listed by the STCW, there are also training facilities or courses which have to be set in the curriculum as follows : 5)

- (i) Deck officer.
  - Pre-sea training for the new entrant as Deck (Nautical) Cadet/Apprentice.
  - Training on board ships at sea, as Deck (Nautical) Cadet/Apprentice.
  - Post-sea training leading to the First Certificate of Competency as a Watch-keeping Officer.

- Subsequent post-sea training leading to all higher Certificate of Competency, including as "Master".

(ii) Engine-room officer.

- Pre-sea training for the new entrant as Engineer Cadet/Apprentice.
- Training on board ship at sea, as junior engineer.
- Post-sea training leading to the First Certificate of Competency as a Watch-keeping Engineer.
- Subsequent post-sea training leading to all higher Certificates of Competency, including as "Chief Engineer)

The aforesaid training has to meet the relevant requirements of the STCW 1978.

Beside the required knowledge and training facilities mentioned above and in order to handle some special activities on board, the existing officers have to attend various up-grading courses to gain brevets of gas pressure, hydrography, pilotage, dredging, bulk carrier etc.

These brevets always change and develop from time to time parallel with the technology development of special vessels.

To conform with the aforesaid brevets, the PLAP is conducting some practical courses. In general those courses still have not yet been delivered intensively. Some courses such as Seamanship, sea Survival and Fire Fighting are given, although they have not yet qualitatively met the international standards due to the lack of measures for ensuring them.

Fire fighting exercises are done by using portable fire extinguishers and sea survival exercises are still done in calm and relative narrow waters.

All the above is to explain that the PLAP with its facilities and scarcities tries to improve its educational system to meet international standards. Obviously the author would like to say ; "The efforts are being made".

Courses in Radar Simulators, Search and Rescue; Emergency Procedure, and Marine Pollution are still not possible to hold due to scarcity of facilities and instructors.

It is commonly known at the PLAP, as it is in other governmental institutions in developing countries, that the main problem which arises in reforming the curriculum is not only the allocated budget from the Government, but also the insufficiency of trained teachers and instructors.

The importance of trained teachers has been concluded by the World Bank Review (6). Trained teachers do make a difference, and in particular that teacher qualifications, experience, and amount of education and knowledge are positively related to student achievement.

In order to provide trained teachers, the Sea Communications Education and Training Centre in cooperation with the International Maritime Transport Academy (IMTA) sends teachers to attend post-graduate studies for maritime lecturers in the Netherlands. Thirty-three teachers are expected to graduate in 1989. They are supposed to devote their additional knowledge in improving their maritime institute and colleges.

#### IV.2. THE NEED FOR TRAINING FACILITIES AND TRAINING EQUIPMENT TO CONFORM WITH THE STCW 1978 CONVENTION.

There are three elements to be improved in education and training of maritime personnel, namely :

- (i) the modernization of syllabi of the training curricula, (ii) the plan in the requirement of technical assistance, of technical advice with regard to modernization of the training programs
- (iii) the third element is quite complex, namely equipment training. Modern training to day is based on equipment. What equipment exists and what is needed must again be carefully looked into. 7)

The modernization of syllabi must be followed together with a good examination and certification system, otherwise the educational objectives will not be reached effectively.

The selection, procurement and maintenance of the training equipment needed and already existing should be based on the consideration that every financial resources for purchasing them is scarce. The third element above will be discussed in this sub-chapter.

As it has been explained in Chapter III point 3, due to its age all of PLAP's facilities are limited in space and urgently need renovation.

Major workshops and laboratory equipment are old and also need updating.

In order to conform with the STCW 1978 Convention, the Ministry of Communications has studied the needed training facilities and training equipment as follows: 8)

- (i) Nautical Laboratories which consist of :
  - (a) Conventional Navigation Laboratory :  
Cronometer, Barometer etc.
  - (b) Electronic Navigation Laboratory :  
Installation, Instruments etc.
  - (c) Charts and Tables
  - (d) Navigation Simulator
  - (e) Astronomy and Meteorology Laboratory
  - (f) Seamanship and Ship Equipment Laboratory
  - (g) Gyro-compass
  - (h) Echo Sounder
  - (i) Radar
  - (j) VHF Distress Receiver
  - (k) Decca
  
- (ii) Technical Laboratories consist of :
  - (a) Engine Round Simulator
  - (b) Diesel Engine
  - (c) Steam Boiler
  - (d) Cooling Systems
  - (e) General Physics Laboratory
  - (f) Electro Laboratory
  
- (iii) Nautical Equipment consists of :
  - (a) Video Projector
  - (b) Video Cassette Programs
  - (c) Overhead Projectors

- (d) Transparency Machines
- (e) Slides Projectors
- (f) Language Laboratory
  
- (iv) Simulator Trainers, consists of :
  - (a) Radar Simulator
  - (b) Navigation Simulator
  - (c) Radar and Navigation Aids Simulators
  - (d) Ship Maneuvering Simulator
  
- (v) Fire Fighting and Life Survival, consist of :  
Breathing Apparatus, Air Compressor, Fire Houses and  
Branches, Foam Branches, Foam Generator, Protective  
Clothing, Foam Extinguishers, Water Extinguishers,  
etc.
  
- (vi) Ship and Cargo Models, consist of :
  - (a) Oil Tanker
  - (b) Cargo Ship
  - (c) Stern Section
  - (d) Fore Section
  - (e) Cargo Derricks
  - (f) Heavy Life Derricks
  - (g) Stability Model

From the equipment needed above, they show that the present PLAP campus location needs to be extended and the building lay-out has to be arranged.

#### IV.3. THE ESTABLISHMENT OF THE NEW MARITIME INSTITUTE TO

## MEET THE FUTURE TRAINING DEMANDS.

### IV.3.1. The Relocation of the PLAP Campus.

The present maximum capacity of the PLAP amounts to 500 students and depends on the dormitories available.

A major increase of the existing capacity is not possible at the present site. Consequently the PLAP is building a new campus which has a capacity of 900 students.

The building and facilities of the new campus is designed to meet international standards and the requirements laid down by the STCW 1978 Convention.

A total of 900 places comprising 600 nautical and engineer cadets and 120 students of MPI / AMK-IS to be trained for MPB III / AMK A, and 120 students of MPI / AMK-IS are proposed.

The training equipment and training facilities such as radar simulator, workshop, laboratories and other facilities for practical drills will be provided under the Maritime Sector Training Project.

Some consideration which strengthen the Government in deciding to relocate the PLAP are as follows :

- (i) the present campus location is extremely noisy,
- (ii) it is not suitable anymore for cadet training because the environment does not support the cognitive domain of educational objectives anymore.
- (iii) It was good at the time of foundation, 36 years ago, with little traffic and utilization of a creek for

practical purposes, but this has changed since then.

- (iv) The new facilities for cadet training at the new site will become necessary in the future.
- (v) The new campus is located on shore with excellent possibilities for a practical training and daily water-front activities. Thus, the young cadet will be able to easily build up a relationship with the future working and living environment.

#### IV.3.2. The Indonesian Maritime Institute.

The PLAP will be relocated to new facilities in Tangerang, West Java and the Maritime Institute (MI) will take over its present facilities.

The MI will deal with upgrading courses for the MPB II and MPB I, AMK B and AMK C.

It will also be responsible for a number of short term courses for sea-going personnel and for management and technical staff of the Directorate General of Sea Communications, Port and Dredging companies and other interested authorities and private bodies.

The various types of courses to be held by the MI will cover a wide range of subjects related to maritime matters.

The relocation of the PLAP and establishment of the MI are efforts of the Government to improve and develop its governmental institute and colleges which deal with



education and training of seafarers and maritime personnel in compliance with the need of the Indonesian Maritime Industry.

#### FOOTNOTES TO CHAPTER IV :

- 1) G.R. Hodge, **Assessing the International and other Pressures for change in the Role and Training of Marine Engineer**. Conference on Education and Training for Seafarers : What policy for the 1990's, London 9 - 10 February 1984, The Institute of Marine Engineers, London, Paper 13, p. 68.
- 2) P.S. Vanchiswar, **Establishment Administration of Marine Affairs with Particular Reference to Developing Countries**, Hand outs, 1987, p. 12 - 13.
- 3) International Maritime Organization, **International Conference on Training and Certification of Seafarers**, 1978, IMO, London, 1987, p. 10.
- 4) *Ibid*, p. 33 and 47.
- 5) V.S. Vanchiswar, *op.cit.* p. 116.
- 6) G. Psacharopoulos & M. Woodhall, **Education for Development**, A World Bank Pub., Oxford University Press, 1985, p.220.
- 7) C.P. Srivastava, **Final Speech**, The International Maritime Lecturers Association (IMLA) in cooperation with the World Maritime University, The Third International Conference on Maritime Education and Training, 17 - 19 September 1984, Malmoe - Sweden, p.2.
- 8) P.T. Peninsula Consultant Service, **The Development of the PLAP as a Seafarers Education and Training Centre**, Team Study for the Ministry of Communications, Jakarta, 1983, p. 32 - 35.

## CHAPTER V

### CONCLUSIONS AND SUGGESTIONS

#### V.1. CONCLUSIONS.

- V.1.1. The Indonesian Institute of Merchant Marine Education and Training has a recognized place in the Indonesian national educational system.
- V.1.2. The certificate courses conducted in the Institute, as well as meeting the international requirements, follow the national educational requirements at the appropriate level.
- V.1.3. Graduates receiving certificates of competency are therefore at the same time qualified by national diplomas to a recognized national standard. This allows graduates to take up positions of responsibility in maritime administration and other relevant fields.
- V.1.4. Due to the insufficiency of the Institute facilities, equipment and qualified teachers, the courses for higher levels of Strata 2 and Strata 3 are given up. It means the organizational tasks of the Institute are not fully carried out.
- V.1.5. The six-semester program has not yet been consecutively followed by the cadets due to the problem in getting merchant vessels for their

shipboard training.

V.1.6. Most of the teachers/lecturers/instructors are diploma holders or were seafarers before. Very few of them have a master's degree. Most of the teachers who have master's degree were not seafarers. No teacher who has doctor's degree teaches at the Institute.

V.1.7. The present location of the campus is not suitable anymore for training of cadets because the environment does not support the practical training activities as it was 36 years ago. The Institute does not have any training vessels and or small craft for sail training and waterfront activities. The relocation of the new campus in Tangerang, West Jawa is one of the Government efforts in order to provide the facilities needed.

V.1.8. The Indonesian Institute of Merchant Marine Education and Training is being improved. It is also being equipped with practical training equipment and adequately trained teachers and instructors to provide complete compatibility with the STCW 1978 Convention.

V.1.9. The improvement of the curriculum deals with competency of seafarers is fully handed by the Ministry of Communications. The Ministry of Education and Culture is only involved in and is responsible for determining non-competency curriculum.

V.1.10. In order to meet the future training demand in the national field, the Government is establishing a new maritime institute which will be responsible for providing training of both the higher level certificates and personnel of ports, shipping companies, government technical employees and other private bodies.

V.1.11. It can be stated with some justifiable confidence that under the Maritime Sector Training Project, the development and expansion now taking place in the Indonesian maritime sector is being accompanied by a supporting backup of training of personnel.

V.1.12. By improving the Indonesian Institute of Merchant Marine Education and Training (PLAP) and other governmental maritime colleges, it can be expected that Indonesian ships will be manned with officers and crews who are experienced and trained to standards equal to that in any maritime nation.

## V.2. SUGGESTIONS.

V.2.1. Some provisions should be made to :

- assist the training staff in establishing sound training management and operation procedures to ensure quality training,
- equip the PLAP with necessary library, simulators, workshops, laboratories and various kinds of facilities for practical drills.

- V.2.2. The curriculum formulators both from the Ministry of Communications and the Ministry of Education and Culture should consider to improve more subjects on general liberal studies, such as Business Management, Humanities, History etc. in order to strengthen the graduates to compete in entering not only sea-based but also land-based careers.
- V.2.3. The Government should provide training vessels/crafts for cadet sail training and waterfront activities by hiring them before the new campus is established.
- V.2.4. The teachers and instructors should be regularly sent to improve their skills, knowledge and qualifications to universities or maritime institutes abroad, such as State of New York Maritime College - USA, United States Merchant Marine Academy Kings Points - USA, Institute for Higher Nautical Education in The Netherlands, Gdynia Merchant Marine Academy - Poland, World Maritime University in Sweden and so on.
- V.2.5. A reliable system for examination and certification seagoing personnel should be improved in order to enhance the reputation of the Indonesian certificates. The system should meet the criterion:
- Objectivity : the examinations must be equal in all parts of Indonesia,
  - Controllable : the examination must be controllable by higher authority,

- Non-deceptive : the examination must not give the possibility or opportunity for deception.

These principles are best served if the Examination Committee, Directorate General of Sea Communications is responsible for all certification examinations within the national maritime sector.

V.2.6. The Examination Committee should be run by professional staff who is permanently employed. For each field of study (Nautics and Engineering), a chief examiner should be appointed. Examination questions should be drawn from an examination questions bank which should be established. The oral examination should be chaired by the supervising authority and at least two independent assessors should be present representing ship owners and employees association.

V.2.7. The students who successfully pass the examinations for MPB III/AMK A, MPB II/AMK B, and MPB I/AMK C should be in level with the Strata system of Indonesia. Thus, the syllabi and the examinations have to reflect this level. The certification should at least meet the minimum standards of the STCW 1978 Convention, but in the long run it would be better to exceed the Convention.

The duties and responsibilities of today's ship's officers as managers as well as the need to adopt and apply new technologies should be reflected both in the curriculum and the examination.

The certificate awarded by the Examination Committee should be endorsed by the Administration.

- V.2.8. Technical assistance should be provided to assist in the organization development of the PLAP, development of curriculum and instructional materials, improvement of sea-based training procedures and other necessary improvements.
- V.2.9. As an IMO member, Indonesia should develop a good relationship with any traditional maritime country and utilize it to develop national maritime education and training.
- V.2.10. It should be taken into consideration by the Ministry of Communications, who run the governmental institute and colleges of merchant marine education and training, that they kindly request the IMO to suggest the PLAP to be the 11th coordinator of the World Maritime University short course branch in the region of South Eastern Asia by which the IMO would assist and support the PLAP with any facilities needed for it.



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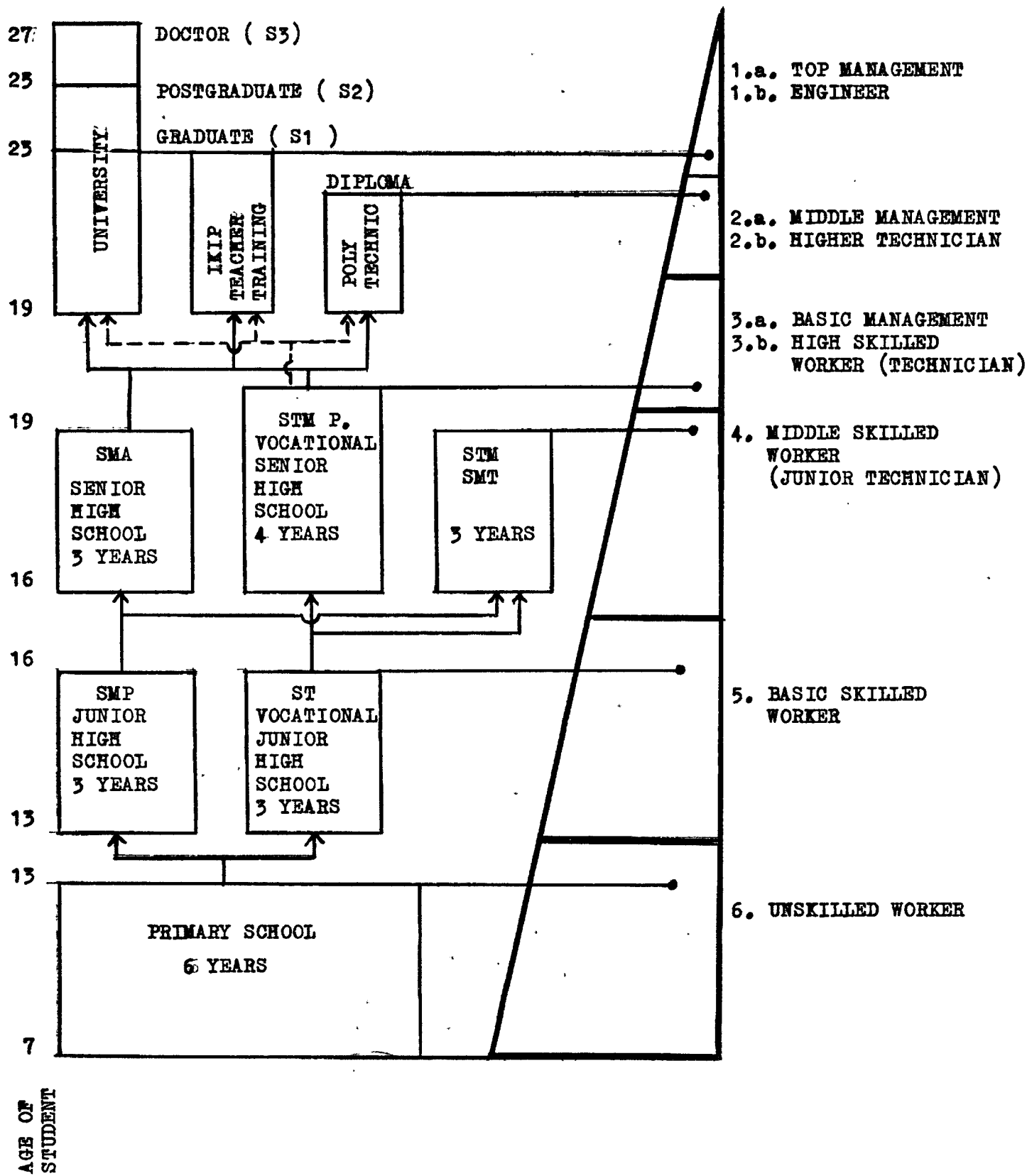
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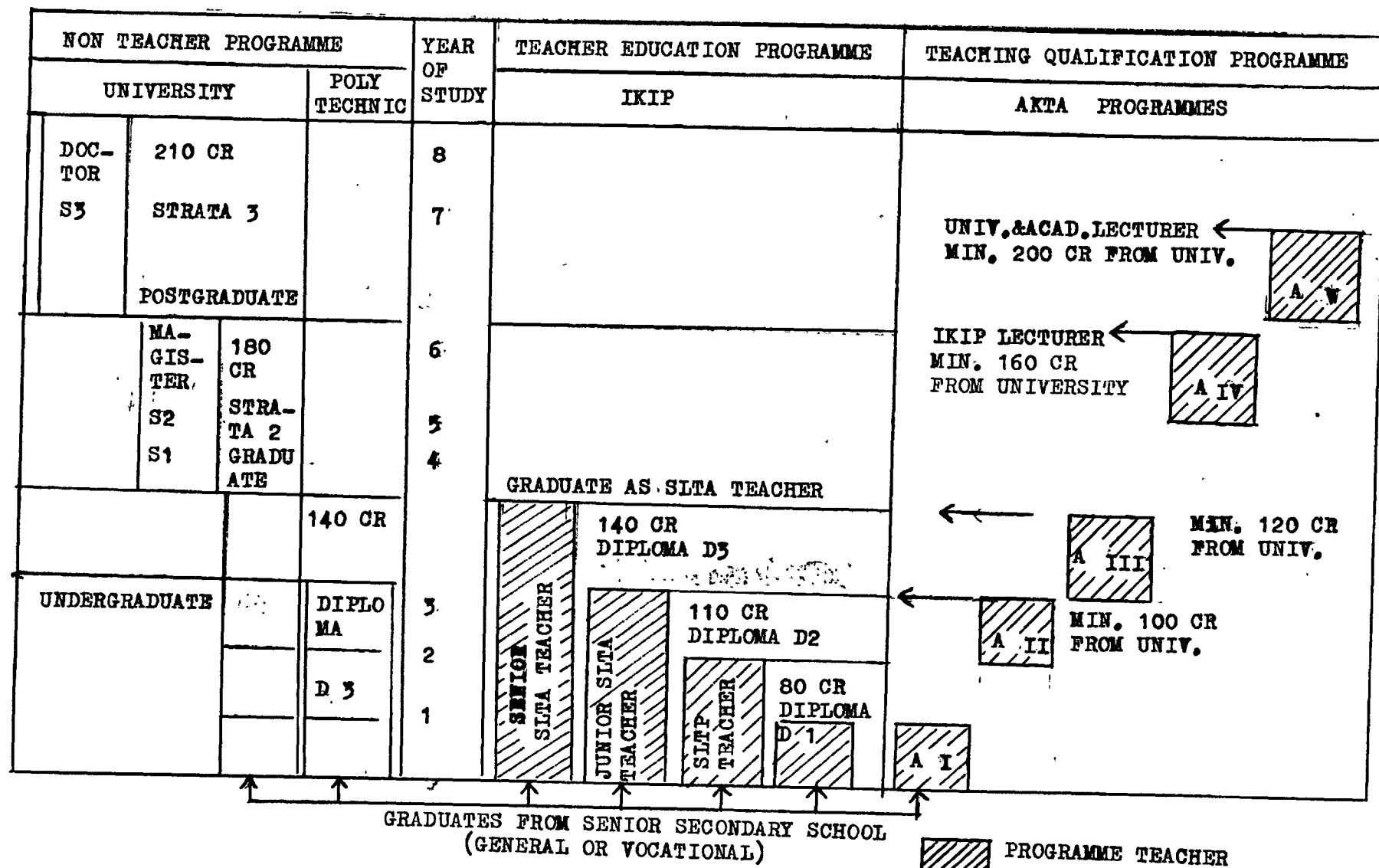
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STRUCTURE OF THE EDUCATIONAL SYSTEM  
MINISTRY OF EDUCATION AND CULTURE



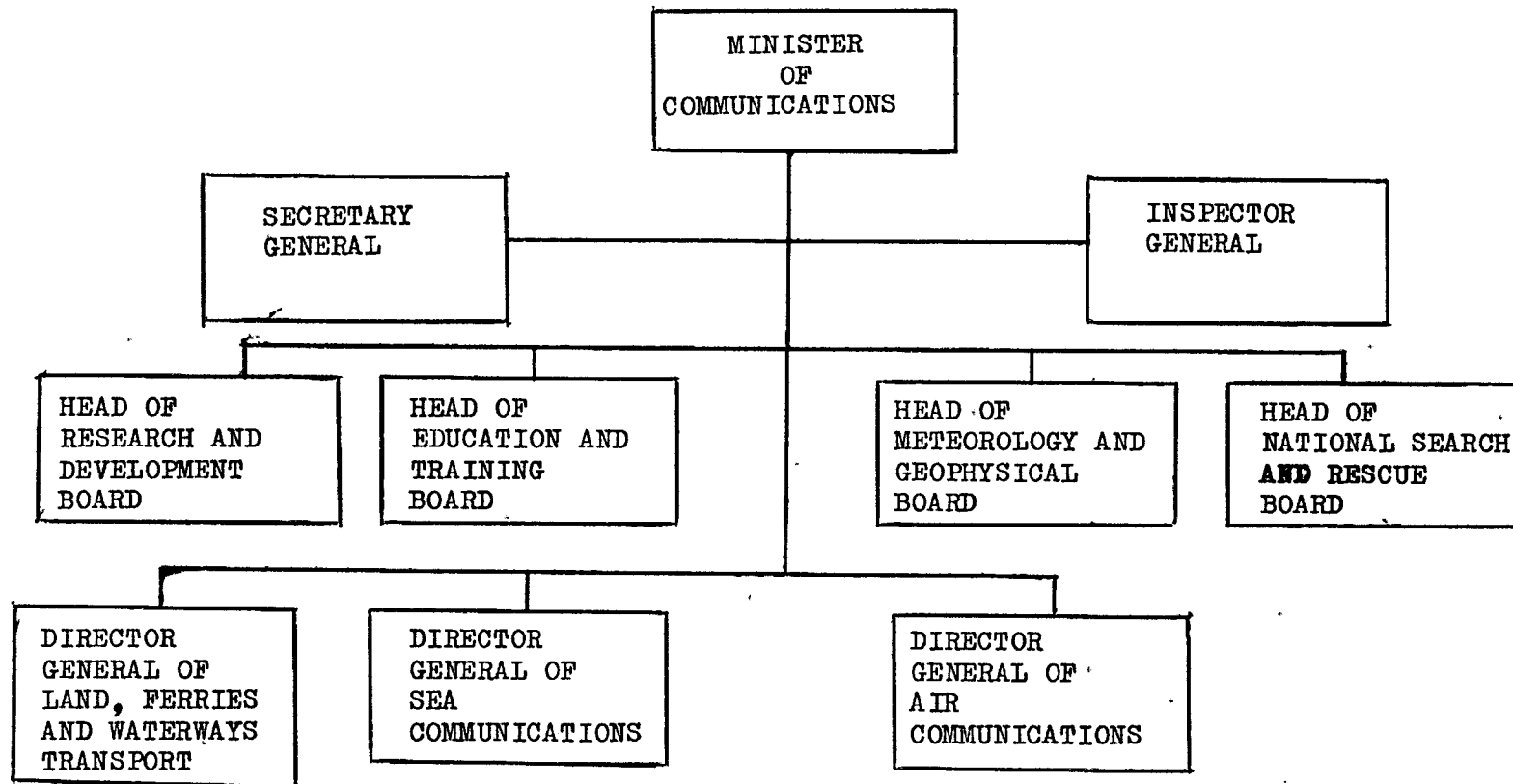
STRATA AND PROGRAMMES FOR HIGHER  
FORMAL EDUCATION AND TEACHER TRAINING

ANNEX 2



ORGANISATION CHART OF  
MINISTRY OF COMMUNICATIONS AND ITS FIRST ECHELONS

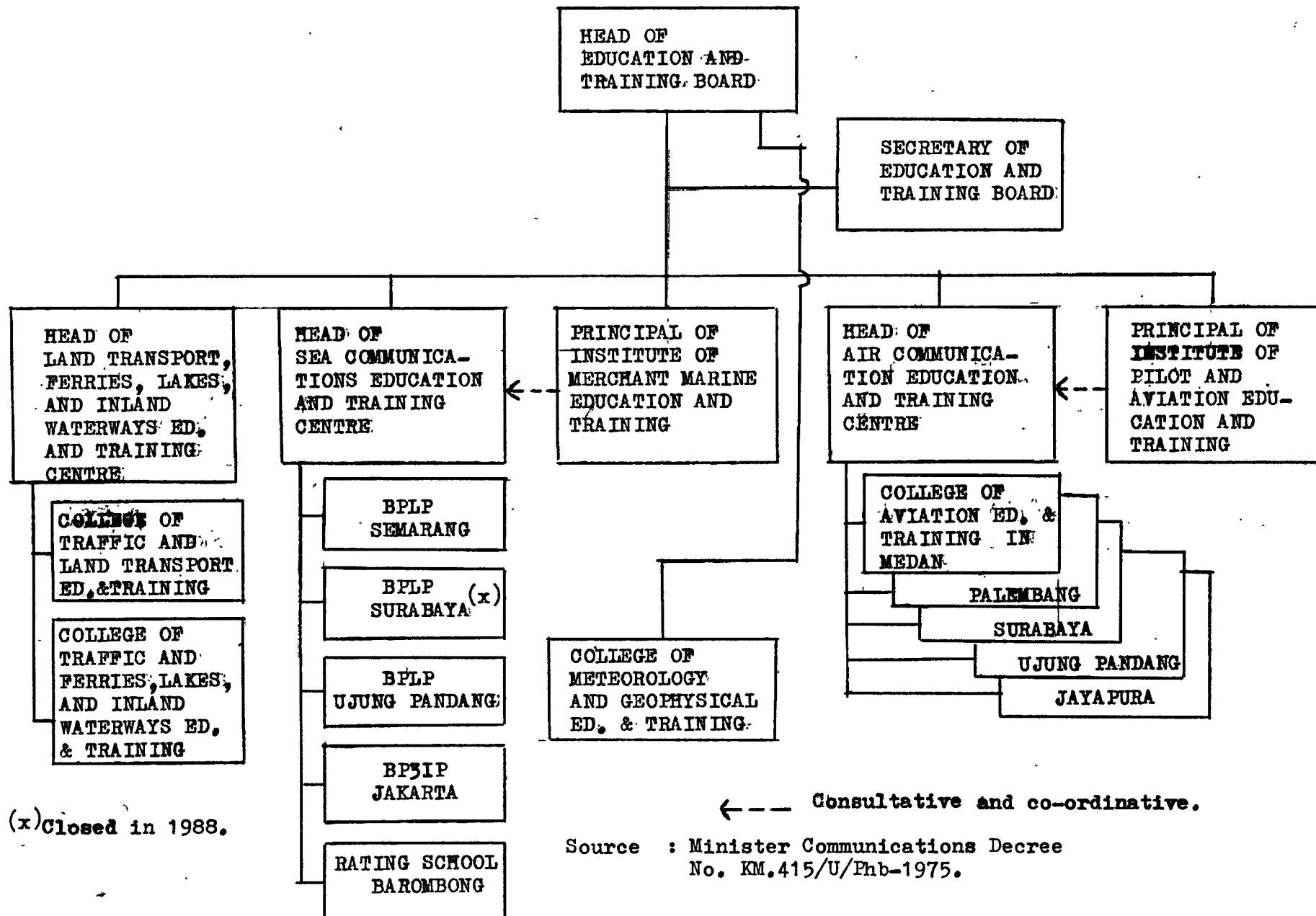
ANNEX 3



Source : Presidential Decree No. 44 / 1974.

ORGANIZATION CHART  
OF EDUCATION AND TRAINING BOARD  
MINISTRY OF COMMUNICATIONS:

ANNEX 4

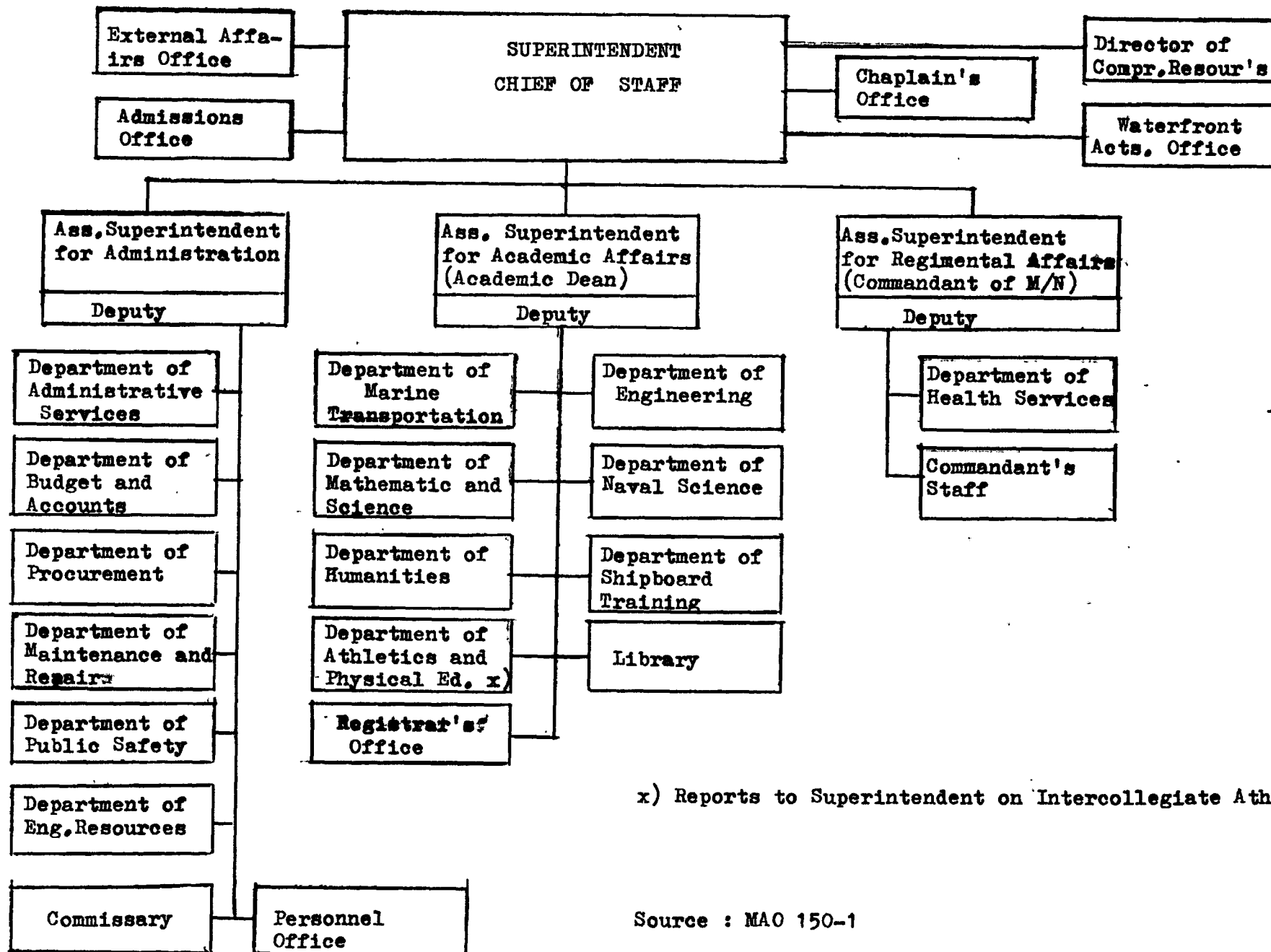


(x) Closed in 1988.

Source : Minister Communications Decree  
No. KM.415/U/Phb-1975.

U.S. DEPARTMENT OF TRANSPORTATION  
MARITIME ADMINISTRATION  
UNITED STATES MERCHANT MARINE ACADEMY

Annex 5



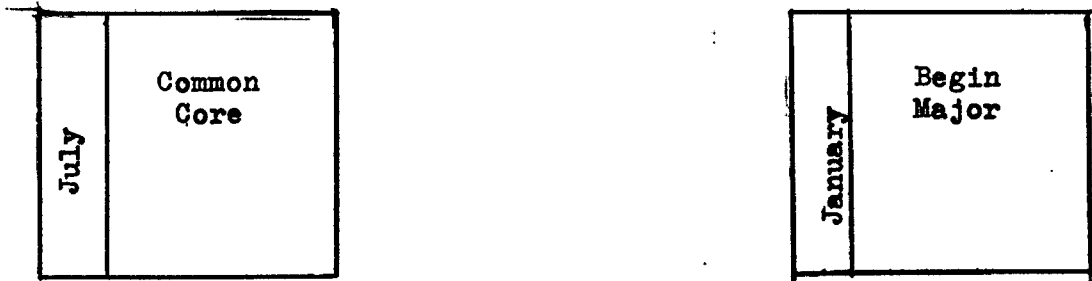
x) Reports to Superintendent on Intercollegiate Athletics

Source : MAO 150-1

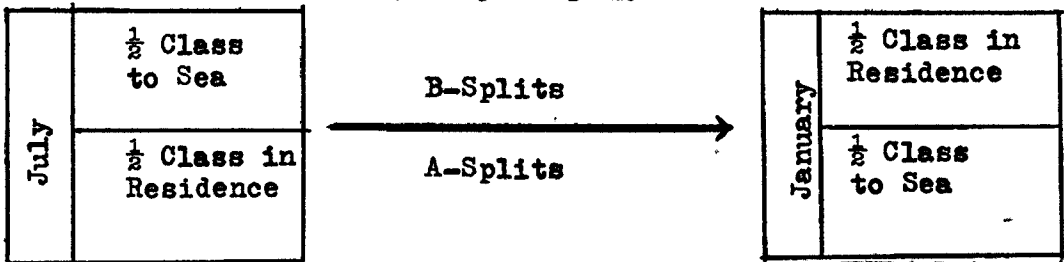


USMMA PROGRAM SEQUENCE

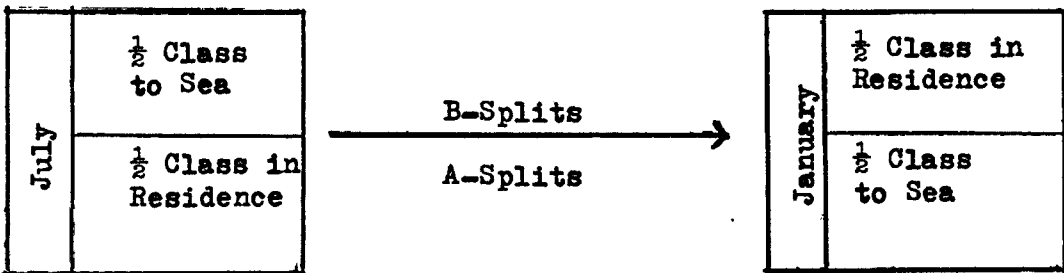
FOURTH CLASS (FRESHMAN) YEAR



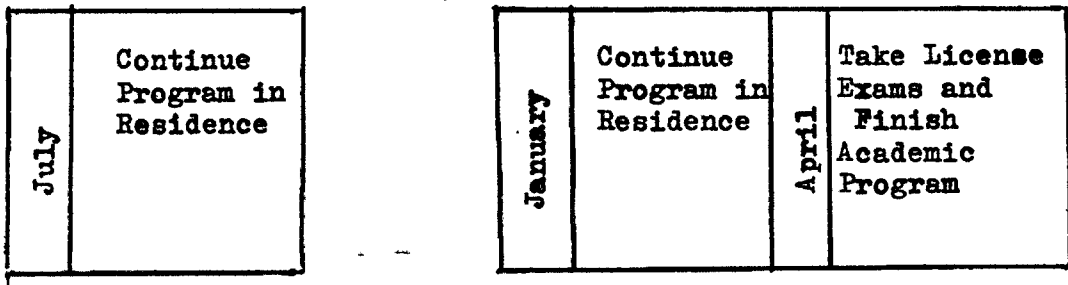
THIRD CLASS YEAR



SECOND CLASS YEAR



FIRST CLASS YEARS



## FIRST AND SECOND QUARTERS

## COMMON CURRICULUM

(Followed by all fourth classmen of USMMA)

	Quarter Credit Hours
Calculus and Analytic Geometry I, II . . . .	8
General Chemistry I, II . . . . .	8
or x)	
Physics I, II . . . . .	7
English I, II . . . . .	6
Engineering Graphics I, II . . . . .	2
Marine Safety I . . . . .	2
Introduction to Nautical Science I . . . . .	5
Introduction to Marine Engineering I . . . .	3.5
Engineering Shop I . . . . .	1
Physical Education . . . . .	2
TOTAL . . . . .	44.5

x) Students who indicate engineering as a tentative curriculum choice on their application will start with **Physics**.

## THIRD AND FOURTH QUARTERS

## COMMON CURRICULUM

Calculus and Analitic Geometry III, IV . . .	8
Physics I, II . . . . .	7
or x)	
Chemistry I, II . . . . .	8
Fundamental of Naval Science . . . . .	3
Safety of Life at Sea . . . . .	1.5
English III . . . . .	3
Physical Education . . . . .	2

x) Students who indicate engineering as a tentative curriculum choice on their application will start with **physics**.

DUAL LICENSE	Quarter Credit Hours
Engineering Graphics III . . . . .	1
Introduction to Marine Engineering II . .	2.5
Introduction to Electrical Engineering .	2.5
Engineering Shop II . . . . .	2
Metal Cutting Processes . . . . .	1.5
Nautical Science IV . . . . .	5

#### ENGINEERING

Engineering Graphics III . . . . .	1
Introduction to Marine Engineering II . .	2.5
Engineering Graphics IV . . . . .	1
Introduction to Electrical Engineering .	2.5
Engineering Shop II . . . . .	2
Metal Cutting Processes . . . . .	1.5
Metal Joining Processes . . . . .	0.75

#### MARINE TRANSPORTATION

Nautical Science II . . . . .	0.5
Nautical Science III . . . . .	5
Accounting for Management . . . . .	3

All midshipmen take courses under a common curriculum above. Courses pertaining specifically to each of the majors are listed below.

#### MARINE ENGINEERING CURRICULUM

##### SOPHOMORE YEAR:

	Quarter Credit Hours
Introduction to Differential Equations	4
Physics III, IV . . . . .	7
Introduction to Computer Science . . .	3
Introduction to Materials Engineering.	3.5

	Quarter Credit Hours
Engineering Mechanics I, II . . . . .	7
Thermodynamics I . . . . .	3.5
Safety at Sea . . . . .	1.5
Naval Weapons Systems . . . . .	3
Economics I, II . . . . .	6
Physical Education . . . . .	2
TOTAL . . . . .	40.5

#### JUNIOR YEAR

Strength of Materials . . . . .	4.5
Principles of Naval Architecture . . . . .	3
Fluid Mechanics I, II . . . . .	4.75
Thermodynamics . . . . .	3.5
Heat Transfer . . . . .	2.25
Electric Circuits . . . . .	7.5
Naval Operations I . . . . .	3
History I . . . . .	3
Managerial Process . . . . .	3
Elective . . . . .	3
Intro to Sailing . . . . .	1
TOTAL . . . . .	38.5

#### SENIOR YEAR

Marine Refrigeration . . . . .	3.75
Alternating Current Machinery . . . . .	3.75
Electronics I . . . . .	3.75
Marine Engineering I, II, III . . . . .	13.25
Internal Combustion Engines I,II . . . . .	7.5
Naval Operations II . . . . .	3
History II, III . . . . .	6
Humanities or Comparative Culture . . . . .	9
Marine Transportation . . . . .	3
Electives . . . . .	15
Physical Education . . . . .	2
TOTAL . . . . .	70

# MARINE ENGINEERING SYSTEMS CURRICULUM

## SOPHOMORE YEAR

	Quarter Credit Hours
Introduction to Differential Equations . .	4
Physics III, IV . . . . .	7
Introduction to Computer Science . . . .	3
Introduction to Materials Engineering . .	3.5
Engineering Mechanic I,II . . . . .	7
Thermodynamics I . . . . .	3.5
Safety at Sea I . . . . .	1.5
Naval Weapons Systems . . . . .	3
Economics I, II . . . . .	6
Physical Education . . . . .	2
TOTAL . . . . .	40.5

## JUNIOR YEAR

Differential Equations I . . . . .	4
Strength of Materials . . . . .	4.5
Principles of Naval Architecture . . . . .	3
Fluid Mechanics I,II . . . . .	4.75
Thermodynamics II . . . . .	3.5
Heat Transfer . . . . .	3.25
Electric Circuits I, II . . . . .	7.5
Naval Operations I . . . . .	3
History I . . . . .	3
Intro to Sailing . . . . .	1
TOTAL . . . . .	37.5

## SENIOR YEAR

Fundamentals of Engineering Design . . . .	3
Machine Design I . . . . .	3

	Quarter Credit Hours
Ship Resistance and Propulsion . . . . .	3
Marine Refrigeration . . . . .	3.75
Alternating Current Machinery . . . . .	3.75
Electronics I . . . . .	3.75
Marine Engineering I,II, III . . . . .	13.25
Internal Combustion Engines I, II . . . . .	7.5
Automatic Control Systems I . . . . .	3.75
Design Electives x) . . . . .	6
Naval Operations II . . . . .	3
History II, III . . . . .	6
Humanities or Comparative Culture . . . . .	9
Marine Transportation . . . . .	3
Physical Education . . . . .	2
TOTAL . . . . .	73.75

x) Design Electives

Computer Control Systems . . . . .	3
Machine Design II . . . . .	3
Ship Structure and Dynamics . . . . .	3
Basic Ship Design . . . . .	3
Electronics II . . . . .	3
Thermal System Analysis . . . . .	3
Automatic Control System II . . . . .	3
Engineering Seminar . . . . .	3

Marine Engineering

	First Sea Period Credits	Second Sea Period Credits
Marine Engineering I	2	2
Marine Engineering II	2	2
Machine Shop	1	1
Electrical Engineering	1	1

Shipboard Systems	1	1
Naval Architecture	1	1
Deck Operation for Engineers	1	-
Refrigeration	-	1
Internship	-	.5
TOTALS	9	9.5

**MARINE TRANSPORTATION CURRICULUM**  
**SOPHOMORE YEAR**

	Quarter Credit Hours
Physics III, IV . . . . .	7
Safety of Life at Sea . . . . .	1.5
Engineering Science . . . . .	3
Introduction to Computer Engineering . .	3
History I . . . . .	3
Economics I, II . . . . .	6
Statistics . . . . .	3
Managerial Process . . . . .	3
Naval Weapons Systems . . . . .	3
Intro to Sailing . . . . .	1
TOTAL . . . . .	33.5

**JUNIOR YEAR    x)**

Marine Materials Handling I, II . . . .	6
Marine Electronics I . . . . .	3
Seamanship I . . . . .	2
Navigation I . . . . .	4
Meteorology . . . . .	4
History II, III . . . . .	6
Business/Maritime Law . . . . .	5
Logistics in Transportation Management .	3
Naval Operation I . . . . .	3

Physical Education . . . . .	1
Elective . . . . .	3
TOTAL . . . . .	40

x) Note that this curriculum is subject to change.  
 In line with industry trends and technology  
 change, the Department of Marine Transportation  
 is introducing courses that will provide a focus  
 on transportation and logistics.

#### SENIOR YEAR

	Quarter Credit Hours
Marine Safety II . . . . .	3
Seamanship II . . . . .	3
Navigation II . . . . .	2
Marine Electronics III,IV . . . . .	6.5
Humanities Sequence or Comparative culture Sequence or Foreign Language Sequence . .	12
Marketing . . . . .	3
Prinsiples of Transportation . . . . .	3
Transportation Decision Making . . . . .	3
Financial Management . . . . .	3
Naval Operations II . . . . .	3
Physical Education . . . . .	2
Electives . . . . .	12
Communications . . . . .	1
Navigation Lab . . . . .	1
Bridge Simulation . . . . .	3
License Seminar . . . . .	2
Advanced Cargo Seminar and Ship's Stabili- ty . . . . .	3
Principles of Naval Admiralty . . . . .	3
TOTAL . . . . .	68



## Marine Transportation

	First Sea Period Credit	Second Sea Period Credit
Navigation	3	3
Seamanship	1	1
Marine Materials Handling	1	1
Electronic Navigation	1	1
Navigations Rules	1	1
Mar. Engineering for Deck	1	-
Naval Architecture	1	1
Labor/Personnel Relation	1	1
Internship	-	.5
TOTALS	9	9.5

## DUAL LICENSE CURRICULUM

### SOPHOMORE YEAR

	Quarter Credit Hours
Shipboard Training Program, First Sea Period . . . . .	14
Intro. to Differential Equations . . . . .	4
Physics III, IV . . . . .	7
Metal Joining I . . . . .	0.75
Intro. to Computer Science . . . . .	3
Engineering Mechanics I, II . . . . .	7
Thermodynamics I . . . . .	3.5
Business Law . . . . .	2
Maritime Law . . . . .	3
Economics I,II . . . . .	6
Naval Weapons Systems . . . . .	3
Intro to Sailing . . . . .	1
TOTAL . . . . .	54.25

# JUNIOR YEAR

	Quarter Credit Hour
Strength of Materials . . . . .	4.5
Principles of Naval Architecture . . . . .	3
Fluid Mechanics I, II . . . . .	4.75
Thermodynamics II . . . . .	3.5
Heat Transfer . . . . .	2.25
Electric Circuits I, II . . . . .	7.5
Marine Electronics I . . . . .	3
Marine Materials Handling II . . . . .	3
Seamanship I . . . . .	2
Navigation I . . . . .	4
Meteorology . . . . .	4
Physical Education . . . . .	1
Shipboard Training Program, Second Sea Period . . . . .	15
TOTAL . . . . .	57.5

# SENIOR YEAR

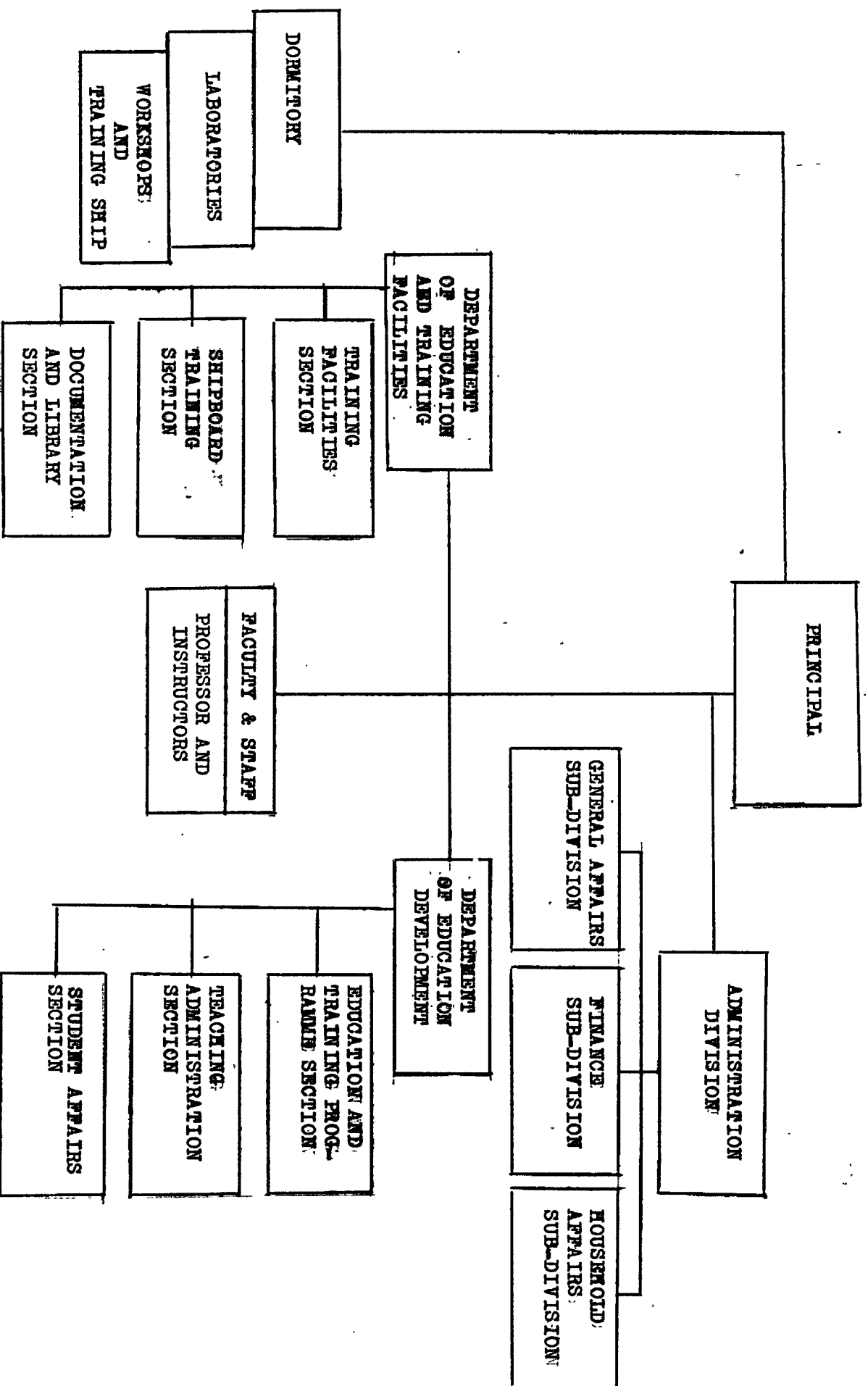
Marine Refrigeration . . . . .	3.75
Alternating Current Machinery . . . . .	3.75
Marine Engineering I, II, III . . . . .	13.25
Internal Combustion Engines I, II . . . . .	7.5
Naval Operations I, II . . . . .	6
History I, II, III . . . . .	9
Humanities IV . . . . .	3
Managerial Process . . . . .	3
Financial Management . . . . .	3
Principles of Transportation . . . . .	3
Marine Safety II . . . . .	3
Communications . . . . .	3
Seamanship II . . . . .	3
Navigation II . . . . .	2
Navigation Lab . . . . .	1
Bridge Watchstanding . . . . .	3

Marine Electronics III, IV . . . . .	6
Senior License Seminar . . . . .	2
Physical Education . . . . .	2
TOTAL . . . . .	78.25
TOTAL PROGRAM . . . . .	267.5

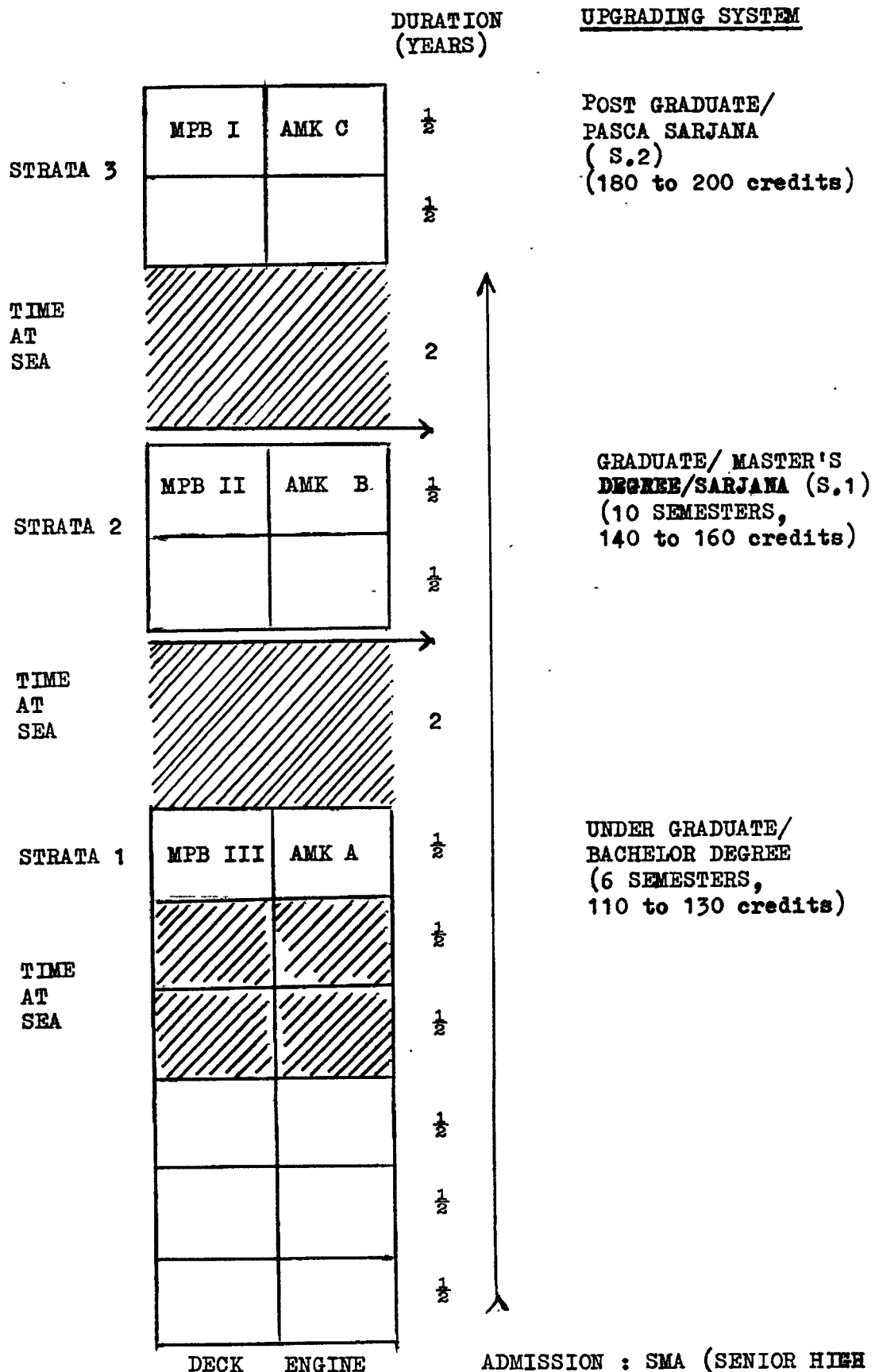
Dual License	First Sea Period Credits	Second Sea Period Credits
Navigation	2	2
Seamanship	1	1
Marine Materials Handling	1	1
Deck Ops. For Engineer	1	-
Electronics Navigation	1	1
Navigation Rules	1	1
Marine Engineering I	2	2
Marine Engineering II	2	2
Machine Shop	1	1
Shipboard Systems	1	1
Marine Engineering for Deck	4	-
Naval Architecture	1	1
Refrigeration	-	1
Labor/Personnel Relations	-	1
Internship	-	.5
TOTALS	16	16.5

ORGANIZATION CHART  
OF INSTITUTE OF MERCHANT MARINE EDUCATION  
AND TRAINING  
(PLAP)

Annex 8



THE PLAP PROGRAM SEQUENCE



DECK ENGINE

ADMISSION : SMA (SENIOR HIGH SCHOOL)  
STM (VOCATIONAL)

**Course : SHIP ENGINEERING**

[illegible]

## COURSE : SHIP ENGINEERING

ANNEX 10

A 10-6.

No.	COURSES	1st Semester		2nd Semester		3rd Semester		4th & 5th Semesters	6th Semester		Total SKS	Remark
		T	P	T	P	T	P	At Sea	T	P		
	6. Ship Safety Studies											
	6.1. Work Safety	-	-	2	-	-	-	1	-	-	3	
	6.2. Ship Safety	-	-	2	-	-	-	1	-	-	3	
	7. Seamanship Studies											Total C = 77 SKS
	7.1. Nautical knowledge	-	-	-	-	1	-	1	-	-	2	
	7.2. Ship Building	-	-	-	-	-	-	1	1	-	2	
	8. Maritime Law	-	-	-	-	-	-	-	1	-	1	
	TOTAL	15	7	14	7	13	8	32	20	*	116	

Ship safety trainings to conform with the STCW 1978 :

- Sea Survival & Survival Craft = 36 hrs.
- Fire Fighting = 36 hrs.

Nautical Knowledge consists of :

- Navigation knowledge
- Tackle and Knotting
- Ship Safety Equipments
- Code of Signal

Source : Professional Curriculum Standards for Education and Training of Indonesian Seafarers,  
Strata A, Ship Engineering Course, 1988 (Draft)  
Garis-garis Besar Program Perkuliahan (GBPP), Workshop Diklat Kepelautan  
di Ujung Pandang, 17 - 21 June 1988.

PROGRAM SEMESTERS CURRICULUM

Annex 10

COURSE : DECK

A 10-1

No.	COURSES	1st Semester		2nd Semester		3rd Semester		4th & 5th Semesters	6th Semester		Total SKS	Remark
		T	P	T	P	T	P	at sea	T	P		
A	<u>GENERAL BASIC KNOWLEDGE</u>											SKS = Semester Credit Units:  Total A = 10 SKS
	1. The National Ideology Pancasila	2	-	-	-	-	-	-	-	-	2	
	2. Religion	2	-	-	-	-	-	-	-	-	2	
	3. The National Heroics - Kewiraan	-	-	-	-	-	-	-	2	-	2	
	4. Basic Culture	-	-	2	-	-	-	-	-	-	2	
	5. Basic Sociology	-	-	-	-	2	-	-	-	-	2	
B	<u>SUPPORTING COMPETENCY KNOWLEDGE</u>											Total B = 27 SKS
	1. Ship Management	-	-	-	-	-	-	1	1	-	2	
	2. Introduction to Law	1	-	-	-	-	-	-	-	-	1	
	3. Introduction to Economics	-	-	1	-	-	-	-	-	-	1	
	4. Introduction to Transportation	-	-	-	-	1	-	-	-	-	1	
	5. Research Methodology	-	-	-	-	1	-	1	-	-	2	
	6. Basic Military Training	-	1	-	-	-	-	-	-	-	1	
	7. Physics	1	1	-	2	-	-	-	-	-	4	
	8. Electronics	1	1	-	1	2	-	-	-	-	5	
	9. Mathematics	2	-	1	-	-	-	-	-	-	3	
	10. First Aid	-	-	-	-	1	-	-	-	-	1	
	11. English	1	-	-	1	1	-	2	-	-	5	
	12. Maritime Law	-	-	-	-	-	-	-	1	-	1	



No.	COURSES	1st Semester		2nd Semester		3rd Semester		4th & 5th Semesters	6th Semester		Total SKS	Remark
		T	P	T	P	T	P	at Sea	T	P		
C	<u>COMPETENCY KNOWLEDGE</u>											
	1. Navigation Studies	-	-	-	-	-	-	-	4	-	4	
	1.1. Territorial Navigation	1	-	1	-	-	-	2	-	-	4	
	1.2. Celestial Navigation	-	-	1	-	1	-	2	-	-	4	
	1.3. Astronomy	1	-	-	-	-	-	-	-	-	1	
	1.4. Ship Position	-	1	-	1	-	2	2	-	-	6	
	1.5. Chartwork	-	-	-	1	1	1	2	-	-	5	
	1.6. Conventional Navigation Insts.	-	1	-	-	-	-	1	-	-	2	
	1.7. Electronic Navigation Insts.	-	-	1	-	-	2	2	-	-	5	
	2. Shipping Law/Shipping Business Studies	-	-	-	-	-	-	-	4	-	4	
	2.1. Shipping Law - Intro. to Law	-	-	1	-	1	-	1	-	-	3	
	2.2. Collision Regulation (COLREG)	-	-	1	-	1	-	2	-	-	4	
	3. Seamanship Studies	-	-	-	-	-	-	-	4	-	4	
	3.1. Cargo Handling	1	-	1	-	1	-	2	-	-	5	
	3.2. Stability	-	-	1	-	1	-	2	-	-	4	
	3.3. Ship Building	-	-	-	1	1	-	2	-	-	4	
	3.4. Maneuver	-	-	1	-	-	1	2	-	-	4	
	3.5. Ship Propulsion	-	-	1	-	-	-	-	-	-	1	

No.	COURSES	1st Semester		2nd Semester		3rd Semester		4th & 5th Semesters	6th Semester		Total SKS	Remark
		T	P	T	P	T	P	at Sea	T	P		
	4. Ship Safety Studies	-	-	-	-	-	-	-	4	-	4	Total C = 79 SKS
	4.1. Ship Safety Equipment	1	-	1	-	-	-	2	-	-	4	
	4.2. Tackle and Knotting	-	1	-	-	-	-	1	-	-	2	
	4.3. Meteorology & Oceanography	1	-	-	-	-	-	2	-	-	3	
	4.4. Code of Signal	-	1	-	-	-	-	1	-	-	2	
	TOTAL	15	7	14	7	15	6	32	20	-	116	

Training to conform with the STCW 1978 :

- Sea Survival & Survival Craft = 36 hrs.
- Fire Fighting = 36 hrs.
- Radar Observer = 36 hrs.

Source : Professional Curriculum Standards for Education and Training of Indonesian Seafarers, Strata A, Deck Course, 1988. (Draft)  
Garis-garis Besar Program Perkuliahan (GBPP), Workshop Diklat Kepelautan di Ujung Pandang, 17-21 June 1988.

A 10-4

**COURSE : SHIP ENGINEERING**

[illegible]

A researcher who chooses qualitative research because he does not like statistical analysis is not a researcher at all. On the other hand, a researcher with a strong statistical background who turns to qualitative methodology because he believes that he has something more to say in ideas rather facts, in his specific problem, has chosen very wisely.

(Jujun S. Suriasumantri, An anatomy of research : Prerequisites, strengths and weaknesses).

Between two blades, which bear the better temper;  
Between two horses, which doth bear him best;  
Between two girls, which hath the merriest eyes;  
I have perhaps, some shallow spirit of judgement;  
But in these nice sharp quilllets of the law;  
Good faith, I am no wiser than a daw.

(William Shakespeare, King Henry VI, Part I, Act 2).

I have tried my best.

(Edi Waluyo).

16 October 1989.